An ASSESSMENT of CLINICAL JAUNDICE OCCURRING

in a VENEREAL DISEASES CLINIC.

Being a Thesis presented for the
Degree of Doctor of Medicine of Edinburgh
University.

by

Robert J.G.Rattrie, M.B.,Ch.B.

CONTENTS

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INTRODUCTION.

INTRODUCTION

Jaundice has long been recognised as a common although variable complication of the treatment of syphilis with the arsphenamines since it was first reported by Klausner in 1911.

During the last War, however, its incidence in many clinics assumed such proportions that it became the most common complication occurring in anti-syphilitic therapy and in this the Royal Infirmary Clinic was no exception. Marshall (1943) believed that the patient under arsenical treatment was anything from twenty to forty times as liable to jaundice as a healthy person. The rise appeared to commence about 1941 and was at its height over the years 1942 and 1943. Since then a gradual decline has occurred and, at the time of compiling this thesis, no cases have been reported in the Royal Infirmary Clinic for almost a year.

The American Civil War, the Franco-German War, the Boer War and the War of 1914-18 have all had their epidemics of jaundice. Witts (1944) has stated that the three most important diseases in the Mediterranean theatre of operations during the last War were infective hepatitis, malaria and venereal disease, and descriptions of large numbers of cases in Libya, Egypt and Palestine have been given by Van Rooyen and Gordon (1942) and Cameron (1943).

Epidemics have also been reported among civilians about the same time and Ford (1943) has given a good account of 300 cases in a London Borough. Reports were also given from the German side by Dietrich (1942), Gutzet (1942) and other workers.

The great rise in the incidence of the disease naturally caused a great amount of research work to be undertaken and a vast number of papers on the subject have appeared in the medical press during the past few years. Previously designated "catarrhal" jaundice (or simple jaundice or epidemic jaundice) the disease has been reclassed as infective hepatitis and the aetiological factor almost certainly appears to be a virus.

Also of great importance was a disturbing incidence of delayed jaundice after the inoculation of United States troops with certain batches of yellow fever vaccine, reported in 1942. Human serum was used in the preparation of the vaccine and omitting the serum from subsequent batches was apparently effective in preventing any further occurrence of jaundice. In Great Britain British troops have developed jaundice after the injection of mumps convalescent serum. Measles-serum hepatitis in schoolchildren was the subject of a Special Article (1943) issued by the Ministry of Health, which also referred to cases of jaundice after blood transfusion. This type of jaundice has been

designated homologous serum jaundice and it appeared that an icterogenic agent was contained in the human serum used for vaccines or for inoculation.

All this suggested that the jaundice during arsenotherapy was possibly due to a virus infection and not to a direct toxic action of the arsenicals, as was previously held to be the case. Most workers have suggested that this virus was passed to the patient on inadequately sterilized syringes from an infected person. The incubation period was found to be almost the same as that of homologous serum jaundice but much longer than that of infective hepatitis. Hence, arsenotherapy jaundice and homologous serum jaundice have been classed together and separately from infective hepatitis, as it would appear that a different virus may be concerned in the aetiology of each group.

As previously stated, the Royal Infirmary Clinic shared in the increase in cases of clinical jaundice noted in many other venereal diseases clinics throughout the country. Consequently in 1944, at the instigation of Mr. Batchelor whose clinical tutor I then was, I decided to investigate the cases occurring at the time in the clinic and also to go back over previous cases of jaundice for a few years, in order that a review of cases in pre-war years could be included. In January 1944 a more vigorous sterilization of syringes by chemical means was instituted

and in January 1945 the autoclaving of syringes was substituted for this with excellent results. Although no cases occurred after the first few months of 1945 it was decided to continue the "observation period" to December, 1945. As the cases were investigated back to the beginning of 1937 a survey of cases extending over nine years has been obtained.

The purpose of this thesis, therefore, is to present a survey of the cases of jaundice in the clinic during the past nine years, to describe the methods taken to combat the high incidence during the war years, and to compare the findings from an analysis of the cases with the views put forward by other workers and draw conclusions thereon. As the investigation commenced in 1944 information on cases prior to that date was derived from the case-history cards, while the remainder came under personal supervision. Altogether, 374 cases have been studied. Of these, 310 were males and 64 females.

The thesis has been arranged in the form of (1) an introduction (in which an outline of the current views held on arsenotherapy jaundice ~~are~~ is given), (2) descriptions of the individual cases and (3) an analysis of the findings with discussions thereon.

The first of the sections will now be discussed under the following headings:-

Types of arsenotherapy jaundice

Predisposing factors

Aetiology

Pathology

Diagnosis and differential diagnosis

Clinical course

Treatment

Relapse

Resumption of arsenotherapy

Prognosis.

TYPES OF ARSENOTHERAPY JAUNDICE.

Beattie and Marshall (1944) have drawn attention to the fact that there are apparently two types of hepatitis occurring during arsenical therapy:-

a) an early type which is usually mild and appears within the first two weeks after the first injection of the drug has been given. It is most commonly seen in intensive arsenotherapy (five-day or twenty-day), but it can occur during the standard treatment course of weekly or bi-weekly injections of an arsenical. The attack is short-lived.

b) a late type which may appear at a variable time after starting treatment, but usually becomes obvious between the 12th and 17th weeks of treatment.

They point out that the pathological and laboratory findings in these two types are different. The total blood cholesterol, cholesterol esters and blood phosphates are increased in the early type, and "bile thrombi" and cholangiolitis have been found in liver biopsy specimens. (Gutman and Hanger 1941: Naunyn, 1919). In the late type it has been found (Dible and McMicheal 1943; Dible, McMicheal and Sherlock 1943) that there is a marked alteration in the liver cells, ranging from swelling to necrosis with varying degrees of fibrosis.

Of the two, the late type is by far the more common.

PREDISPOSING FACTORS in AETIOLOGY

Ruge (1927, 1932) has shown that increases in the jaundice rate in syphilitics are similar to the rise in the infective hepatitis rate in the general population, but at a much higher figure. During the last war the rise in incidence of infective hepatitis was found to co-exist with an increase in the number of cases of jaundice among persons receiving anti-syphilitic treatment.

There must be reasons why jaundice is more common in war than in peace, and Witts (1944) believes that these can only be predisposing factors.

He states that the agents commonly invoked are cold, strain, dietary changes and intestinal infection.

In discussing the question of cold he states that he has found respiratory catarrh co-existing in some cases of infective hepatitis.

Gordon (1943) found that respiratory disease preceding the onset of the disease was rare, but he quotes Fraser (1935) and Glover and Wilson (1931) as reporting epidemics associated with sore throat. Witts draws attention to the high incidence in British air-crews who may be exposed to the cold of high altitudes. However, the incidence in American flying personnel was not above the normal.

He considers strain to be an unlikely factor, for the disease occurred among troops in the back areas as well as in those in the front line.

He does not believe there is evidence of any dietary predisposition. It had been suggested that officers, who have had a much higher incidence of jaundice than the ordinary ranks, ate less carbohydrate than the men, but he points out that it would be ludicrous to pretend that the officers were suffering from carbohydrate deprivation. Also, suggestions of a deficiency of vitamens appeared unfounded to him. The Services were better fed than the civilian population during the war and yet jaundice was much commoner among the former. However, the recent work proving the protective influence exerted on the liver by the sulphur-containing amino-

acids (e.g. casein in skim milk) suggests that inadequate diet may play a part as a predisposing cause. This will be discussed more fully under treatment. Marshall (1943) believes that malnutrition is a predisposing factor.

Lastly, on the question of diarrhoea and dysentery, he states that they were unusually mild in the last war and that they were not more frequent than normal in the history of cases of infective hepatitis.

SEASONAL INCIDENCE.

Witts (1944) noted a rise in infective hepatitis during four successive autumns of the war. Beattie and Marshall (1944) reporting on the aetiology of post-arsphenamine jaundice did not find the incidence varying from month to month.

SEX.

Men have been infinitely more liable to jaundice than women. Marshall (1943) found that the incidence among women serving in the Forces and among the civilian wives of soldiers under his care was under 2%. He also states that congenital syphilitic children do not often get jaundice.

TYPE OF SYPHILIS.

Jaundice is equally common to, and does not show any difference in type, in treated cases of early, late, latent or congenital syphilis (Marshall, 1943). Syphilis itself may be a predisposing factor and the

jaundice of early syphilis may only be a super-infection. Dible et al (1943) found the liver lesions in one untreated case of syphilis with jaundice similar to those in arsenotherapy jaundice. However, they do not believe that syphilis is a cause of arsenotherapy jaundice.

PRIVATE PRACTICE.

Mr. Batchelor has informed me that in his experience of private practice about half a dozen patients only have developed jaundice during treatment.

Before concluding these remarks the question of alcohol must be mentioned as, for a time, it was considered by many venereologists to be one of the main predisposing factors in the causation of arsenotherapy jaundice. Marshall (1943) considered that alcohol increased the liability to jaundice. Stokes (1934) believes that alcoholics are more liable to ascites if liver damage occurs, and that the ultimate prognosis is worse in alcoholics. Walton (1945) found that the incidence of infective hepatitis was as high in drinkers as in teetotallers. Witts (1944) thought that alcohol did not play any part in predisposing to infective hepatitis. However, Damodaran and Hartfall (1944) in a paper on an outbreak of infective hepatitis in the Garrison of Malta thought that alcohol was a contributory cause and that it was probable that it precipitated jaundice

in the group of hepatitis without jaundice. They drew attention to the fact that the incidence among Indian troops, of whom the vast majority are teetotallers, was negligible compared with that in British troops.

AETIOLOGY.

The rise in jaundice in patients undergoing anti-syphilitic treatment has caused a great deal of attention to be focused on the problem of aetiology. For many years it had been the widely accepted opinion that the condition resulted from a direct toxic action of the arsenicals on the liver. However, as a result of the great amount of research conducted on infective hepatitis and homologous "serum jaundice" during the past few years, this view has given way to the theory that a virus is the aetiological agent.

Goodman and Gilman (1941) thought that arsenotherapy jaundice "may be due to one or a combination of the following factors - the drug, syphilis itself, or intercurrent infection. The evidence is convincing that many cases represent attacks of non-specific catarrhal jaundice occurring in patients whose livers are subjected to the added insults of syphilis and an arsenical". Also in 1941, Mitchell (reporting on jaundice in syphilitics under treatment in the Canadian Army in Great Britain) suggested that it was due to "the association of two hepatotoxic agents - the arsenic and the agent or toxin of infectious

hepatitis in patients under arsenotherapy".

Therefore it is proposed to discuss the question of aetiology under the three headings of (1) syphilis itself (2) the drug and (3) infection.

(1) SYPHILIS ITSELF AS A CAUSE:

It is known that damage to the liver parenchyma with or without icterus, can occur at any stage of untreated syphilis, acquired or congenital. Marshall (1943) points out that it is rare in early acquired syphilis, but when it does appear it is usually during the severe florid secondary stage.

Milian (1934) believed that the delayed jaundice of arsphenamine therapy is, in many cases, due to a later involvement of the liver after inadquate early treatment. Dible, McMicheal and Sherlock (1943) in one untreated case of syphilis with jaundice fonnd that the liver lesions were similar to those in arsenotherapy jaundice. However, they do not consider that syphilis is a cause of arsenotherapy hepatitis.

There is an important difference to be noted between the jaundice in untreated cases of syphilis and arsenotherapy jaundice. In the former active anti-syphilitic treatment can be commenced without danger in most cases, but in the latter the arsenicals must be withheld as continuation of therapy has been found to increase the liver damage.

(2) THE DRUG

The organic arsenicals are known to be

hepatotoxic as they can produce liver damage in experimental animals and are considered by many to be the cause of the early type of jaundice occurring during intensive arsenotherapy. The benzene component of the arsphenamines has been suspected, as many chemical compounds containing the benzene radicle, such as cincophen are recognised as liver poisons.

For a time most venereologists thought that the jaundice was due to a form of arsenic poisoning due to a hypothetical idiosyncrasy in those whom it usually affects, but some cases of jaundice have been known to continue treatment with arsenic without ill-effect. It is interesting to note that, in general, inorganic arsenic is held as an uncommon cause of janndice.

However, if the drugs had been solely responsible for the jaundice the incidence of the disease should remain fairly uniform from year to year. This has not been the case. Beattie and Marshall (1944) found that jaundice occurred in 2 per 100 cases of new cases of syphilis under therapy in their clinics and, although no change in the scheme of treatment, dosage, type or manufacturer of the drugs was instituted, the incidence of the disease rose steadily during 1941 and 1942 until in one clinic 46% of treated cases developed jaundice.

The possibility of alteration in the toxicity

of the drug as a result of wartime conditions was discarded by them when it was found that some clinics using the same drugs, and often the same batches, reported a low incidence of jaundice.

The incidence seems to be less following the use of mapharside. Mitchell (1943) gives the incidence of jaundice as about three times as great in neoarsphenamine cases as in the mapharside cases. Marshall (1943) quotes Anwyl-Davies as supporting this opinion.

Marshall (1944) states that jaundice has been noted during bismuth treatment, and was described by Hutchinson in the days of mercury.

All this suggests that although syphilis and the drug may cause liver damage they cannot be responsible alone for the increase in jaundice.

Hence, the third suggestion of Gilman and Goodman, namely infection, must be considered.

(3) THE ROLE OF INFECTION.

The great attention paid in recent years to the problems of infective hepatitis and the jaundice following the administration of human blood products has led to the belief that arsenotherapy jaundice may be due to an infection by a virus or an icterogenic agent passed from patient to patient. The rapid rise in the incidence of jaundice among syphilitics in recent years was observed over a period when infective hepatitis was becoming

increasingly common in the general population and among Services personnel, and this has favoured the theory of infection. It has been found that the clinical course is almost identical in all three types and Dible and his fellow-workers proved that the hepatic lesions were similar in each type.

Previously named "catarrhal" jaundice by Virchow in 1865, infective hepatitis is now believed to be due to an infection with a virus. The view was that the disease originated in a catarrh of the duodenum which involved Vater's ampulla and led to the plugging of the orifice of the common bile duct with mucus. It is now believed that all forms of simple jaundice - as distinct from gross obstructive jaundice, haemolytic jaundice, and toxic jaundice - arise from a hepatitis. The disease has an incubation period of 20 - 40 days (Booth and O Kell 1928: Pickles 1939, Witts 1944, Walton 1945) and may exist with or without clinical jaundice. Its onset, which may be sudden and accompanied by high fever, is characterised by anorexia, nausea and vomiting, abdominal pain or a feeling of fullness and pain and stiffness in the joints . Witts considered anorexia in soldiers as diagnostic. Once jaundice has developed the patient frequently states he feels better. There is often moderate enlargement of the liver and tenderness over the hepatic area. The stools are clay-coloured and bile is readily seen in the urine.

Skin rashes, urticaria and conjunctivitis have been noted. An uncommon feature is neuritis (Witts). The duration is about 40 days. Recovery is the rule, but deaths have occurred. Walton found the mortality to be less than 0·5%.

The pathogen of a disease which is rarely fatal is, of course, hard to establish, but, as already stated, the mass of evidence favours a virus. For example, Voegt (1942) reported successful transmission to human volunteers by oral administration of duodenal juice and subcutaneous and intramuscular injections of serum and blood from cases of infective hepatitis. Cameron (1943) injected serum or whole blood subcutaneously into seven people - of the six cases he followed up all subsequently developed jaundice.

Findlay and Martin (1943) collected nasal washings from three persons suffering from jaundice following yellow-fever immunisation (a disease thought to be closely related to infective hepatitis and due to a virus infection) and instilled the washings intranasally into three supposedly normal individuals each of whom developed jaundice.

Persons fed on gelatin capsules containing faeces from diseased cases developed hepatitis, (War Office 1945). Attempts to pass the disease to animals have failed. All this suggested that the mode of spread may be by "droplet" infection

(e.g. herding of troops together) or by the contamination of food, possibly by flies. Essen and Lembke (1944) claimed that they have demonstrated the virus of infective hepatitis by means of the electron microscope and describe it as a compact polyhedral elementary body with a diameter of 180 mμ.

In the American Army in 1942 more than 28,000 men developed jaundice after yellow fever vaccine, and when the human serum used in making up the vaccine was omitted the outbreak of jaundice was abruptly halted. In Britain in 1937, 41 of 109 recipients of a single batch of measles convalescent serum developed jaundice and 8 died. Hepatitis has also been recorded after the use of plasma from a mumps convalescent (Beeson et al 1944). Cases have been seen after transfusion with serum and plasma and, on one or two instances, jaundice after transfusion of blood alone has been found. The clinical course and pathological findings in this "serum jaundice" are similar to those in infective hepatitis but the incubation period is about three times as long (about 60-90 days according to Witts). It has been suggested that the aetiological agent is a virus or icterogenic agent contained in the plasma or serum used for inoculation. Very small quantities even of pooled material are effective, though the dose and route of administration seem to bear no relation to the severity of the resulting hepatitis.

Some workers say that the virus of this "serum jaundice" is the same as in infective hepatitis and claim that the longer incubation period is due to the method of transmission. Regarding this theory it is interesting to note that when Findlay and Martin transmitted the disease to three normal people by intranasal instillation the incubation periods were 28, 30 and 56 days respectively, but that the incubation period was 80-83 days when the material was given by injection. It appears, therefore, that there is a close relationship between these two conditions of infective hepatitis and "serum jaundice".

What bearing, then, has the problem of these two diseases upon the question of the aetiology of so-called "post-arsphenamine" jaundice? It is that arsenotherapy jaundice is a condition very similar, in most respects, to these two before-mentioned diseases, and this is supported by four factors, as follows:-

(a) There has been a co-existing rise in the incidences of infective hepatitis and jaundice in patients receiving antisyphilitic therapy. This point has already been discussed.

(b) The clinical courses of all three run on similar lines. The clinical course of infective hepatitis has been briefly outlined above and

that of arsenotherapy jaundice will be described later.

(c) The liver biopsy studies begun by Iversen and Roholm in 1939, and amplified by Dible and his colleagues in 1943, have demonstrated a common picture in infective hepatitis, arsenotherapy and so-called serum jaundice.

(d) The mode of spread, which will now be described more fully.

MODE OF SPREAD.

This will be discussed under two headings:-

A. "Droplet" infection

B. Inoculation and the role of syringes.

A. "Droplet" infection.

Although a considerable body of opinion favours the spread of infective hepatitis by excreta and flies, the orthodox opinion is that the virus is spread by droplet infection.

The possibility of spread of arsenotherapy jaundice as a result of the "herding" of patients in crowded waiting-rooms at clinics has been suggested, but Marshall (1943) was not able to substantiate this. The communal life of the soldier, however, favours the spread of any infectious disease. Maccallum (1945) made a 20% broth suspension of faeces from a case of arsenotherapy jaundice and sprayed the suspension into the nose and pharynx of 6 volunteers, but none of them developed jaundice.

Thus it would appear that "droplet" infection is not the method of spread of the disease.

B. Inoculation and the role of syringes.

Oliphant, Gilliam and Larson (1943) have shown that cases who had developed jaundice after inoculation with yellow-fever vaccine could pass on the disease if their sera were given by subcutaneous injection to a second group of individuals. They also proved that a further passage to a third group of individuals was possible with the serum of those who developed the disease in the second group. Findlay and Martin in 1943 obtained nasal washings from 4 cases with icteric or pre-icteric symptoms following yellow-fever immunisation and injected these washings into 4 human volunteers who had all been immunised against yellow-fever from a good batch of vaccine. All developed jaundice except the fourth, who had fever, vomiting and diarrhoea. Darmady and Hardwicke (1945) have reported cases of infective hepatitis among airmen and believe that there was strong evidence that in some of the cases an icterogenic agent had been introduced during the course of some type of inoculation.

Injection therapy plays a major part in the treatment of syphilis. Therefore suspicion turned on the syringe-technique used in venereal diseases clinics, especially as epidemics of jaundice occurring in diabetic clinics (Graham 1938:

Vaanfalt 1944; Droller 1945) where syringe-technique is widely used, were reported. Of the 62 cases which Droller described, 4 died and 6 were left with evidence of residual liver damage.

It has already been mentioned the very small quantities of pooled serum have proved effective in transmitting jaundice such as following vaccination. Therefore small quantities of infected material left on inadequately sterilized syringes would be sufficient to spread the disease. In 1943 Bigger demonstrated that the technique then employed was inadequate to prevent the passage of infective material. He filled a syringe with 0·6 gm. N.A.B. in 10 cc. of distilled water and 0·2 cc. of blood heavily infected with staphylococci. This was expelled and the syringe washed with distilled water, then with 0·1% biniodide of mercury and then with distilled water. Finally, it was filled with 10 cc. of distilled water and 4 inoculations (1, 2, 2, and 5 cc.) were made into blood culture bottles. Each bottle after incubation contained living staphylococci. This was repeated without the biniodide and it was found that the worst growths came from syringes with loose plungers, i.e., fluid still in the syringe from the previous water. Thus it would be easy to transmit the hypothetical virus from patient to patient.

Also in 1943 MacCallum suggested that the

jaundice was due to transmission of infection from patient to patient by means of traces of blood left in the syringes which, at that time, were not sterilized by heat between cases in most venereal diseases clinics. Then Salaman and his co-workers (1944) showed that if a careful aseptic technique was used with a sterile syringe for each patient the incidence of post-arsphenamine jaundice could be greatly reduced. MacCallum (1945) took blood from a case of arsenotherapy jaundice and injected small quantities subcutaneously into 10 volunteers, 7 of whom subsequently developed jaundice, thereby demonstrating that an icterogenic agent was present in the serum of post-arsphenamine jaundice.

Green (1945) has shown that where only intramuscular or subcutaneous injections are given during arsenotherapy, i.e., the transmission of minute quantities of serum from patient to patient is avoided, no cases of jaundice have occurred.

Thus there was no doubt now as to the method of spread of the disease in venereal diseases clinics and attention was directed to improving the sterilization of syringes.

Bigger, having proved the inadequate sterilization of syringes by means of chemicals, suggested that placing a bulb between the needle and syringe so that no blood would flow into the syringe, or better still boiling the syringes should be the methods employed.

The drawbacks to boiling, however, were that most clinics used syringes of the metal-glass type which have to be boiled with care, and the large number of patients attending, such a technique could only be carried out with efficiency in a relatively small clinic. Anwyl-Davies (1942) did not consider that boiling syringes between injections had any effect on the incidence of jaundice.

A Committee appointed by the Medical Research Council published in 1945 an memorandum on the sterilization, use and care of syringes. It is suggested that an all-glass syringe is the most suitable type to use, as they are easier to clean and sterilize than those made of glass and metal, are less likely to break on heating, have no cement to melt in the oven or autoclave and may be assembled before sterilization. The used syringe is washed with warm soapy water and then with warm sterile water. It is then assembled, placed in a suitable test-tube and covered with kraft paper. If a hot air sterilizer is used the temperature must be maintained at 160°C. for not less than one hour. The oven should be cold when the syringes are put in. If autoclaving is the method employed a temperature of 120°C. (15-20 lb. pressure) must be maintained for 20 minutes. Needles are treated by similar means.

The advantages of such a technique of sterilization are obvious. Large numbers of syringes can be used and adequate sterilization is assured by heat. Also, each patient has a sterile syringe to himself - a principle advocated by Salaman and his co-workers.

THE INCUBATION PERIOD.

Before leaving the subject of the relationship of infective hepatitis, "serum" jaundice and arsenotherapy jaundice and the bearing it has on the aetiology of the last named condition, mention must be made of the incubation periods of these three diseases.

These three conditions, so similar in many respects, differ with regard to the lengths of their incubation periods. The incubation periods of "serum" and arsenotherapy jaundice, which are about the same length, are almost two to three times as long as the incubation period of infective hepatitis.

Booth and OKell (1928) and Pickles (1939) give the incubation period of infective hepatitis as 20-40 days. Walton (1945) puts it at 28-42 days and Witts found it to be approximately 30 days.

The incubation period of serum jaundice and arsenotherapy jaundice is about 30-90 days (Witts). Walton states that it is 30-120 days. Beattie and Marshall (1944) found that jaundice appeared between 12 and 17 weeks after the initiation of arsenical treatment.

These findings suggested that two different viruses existed in aetiology - one causing infective hepatitis on the one hand and another virus being responsible for serum and arsenotherapy jaundice on the other. However, some workers believe that the same virus is concerned in all three conditions and that the difference in incubation periods may be related to the route of infection. For instance, Findlay and Martin (1943) have shown that if nasal washings from cases of yellow-fever vaccine jaundice were injected into normal persons, jaundice appeared in these people within 80-83 days. If the washings were instilled into the nasal cavity the incubation period fell to about 30 days.

As a result of the findings of such workers as Oliphant et al (1943) and Findlay and Martin (1943) on the transmission of yellow-fever vaccine jaundice, MacCallum's (1945) demonstration of the presence of an icterogenic agent in the serum in post-arsphenamine jaundice and the long incubation period, these two conditions must therefore be regarded as examples of the variety of jaundice now known as homologous serum jaundice.

PATHOLOGY OF ARSENOTHERAPY HEPATITIS.

Most venereologists used to considere that the cause of jaundice in anti-syphilitic therapy was due to a direct toxic action by the drugs on the liver.

The liver biopsy studies of Iversen and Roholm in 1939 showed, however, the essential similarity in lesions of this form of jaundice with those in epidemic hepatitis.

In 1943 Dible, McMicheal and Sherlock amplified these studies by performing liver biopsies on cases of infective hepatitis and arsenotherapy and serum jaundice. They were able to construct the picture of the pathological changes present during life and to follow these towards recovery and death.

The method they employed was the aspiration of a small cylinder of liver tissue into a 2 mm bore cannula passed transpleurally along an anaesthetised track into the right lobe of the liver. The method was only used in carefully selected cases in case haemorrhage occurred. They had three haemorrhages and one death among their cases.

They found that there was a definite hepatitis, characterized by severe cytological changes and more or less acute necrosis and autolysis of liver cells, leading to a diminution in the size of the lobule and often to a disorganization of the columns of liver cells. There also occurred a considerable invasion of the lobules, especially of their portal zones, by leucocytes and histiocytes. Successive biopsies revealed that in recovery there is a restoration of the liver even in cases in which disorganization is severe. Where death took place the picture in the

terminal stages was one of acute yellow atrophy

The four groups into which they divided the degrees of intensity of liver damage were as follows:-

1. Severe acute hepatitis with a diffuse lesion affecting the whole liver lobe. A considerable destruction of cells, disorganization of liver pattern and infiltration of inflammatory cells were present.
2. Moderately acute hepatitis with mixed diffuse and zonal lesions. Here destruction of the lobule was less pronounced, but infiltration of the portal zones was more conspicuous.
3. "Zonal" limited type of hepatic lesion. This group represented either a mild hepatitis or a late condition in a hepatitis which is recovering.
4. Chronic residual and fibrotic lesions.

They suggested that in the early stages degeneration and autolysis were most severe in cells around the hepatic vein and that the leucocytic and histiocytic reaction may proceed centrally from the portal zones. Biopsies on the first day of detectable jaundice showed advanced hepatitis indicating that liver damage probably begins with the prodromal symptoms which are so often regarded as gastro-intestinal in origin.

They could find no evidence of obstruction of the interlobular bile ducts and concluded that the pathological basis of epidemic jaundice was a hepatitis

and not biliary obstruction following duodenal inflammation. In 1942 Van Rooyen and Gordon had shown that there was no evidence of duodeno-biliary catarrh.

These findings were the same in cases of infective hepatitis, serum and arsenotherapy jaundice. In one untreated case of syphilis with jaundice the lesions were similar to those in arsenotherapy jaundice. They point out that the hepatic lesions during antisyphilitic therapy are not the same as those produced in animals by arsenic. The latter are mostly haemorrhagic, necrotic and fatty and require massive doses to produce them; the jaundice in man occurs with normal doses and is characteristically irregular in its incidence. They conclude that the jaundice during anti-syphilitic treatment is not due to the treatment or to the syphilis.

On the question of future evolution they gave four possibilities as follows:-

1. Clinical recovery with complete restitution of the liver may follow even severe diffuse lesions, regeneration being assisted by the remarkable preservation of the reticulin framework which probably provides a scaffolding on which the lobule is reconstructed.
2. Continuous progress of lesion leading to death. In such cases post-mortem examination showed acute or subacute liver necrosis.

3. Development of liver cirrhosis when the disease is more prolonged.
4. Mild residual fibrosis may persist for some time in cases with the zonal type of lesion, probably recovering late.

They believe there is a suggestion of a similar or identical agent in all three types of jaundice.

In 1944 Lucké issued a paper on an analysis of 125 fatalities from over 52,000 cases of infective hepatitis in the American Army in 1942. He draws attention to the final phase usually being ushered in by nervous symptoms (a characteristic noted by Graves in 1843) and associated with ascites and vomiting. Haemorrhages were common in the late period, especially in the intestines and lungs. The changes in the liver were invariably those of acute yellow atrophy, with characteristic red zones of complete liver-cell destruction and survival of vessels, bile ducts and supporting tissue; and other yellow areas of hyper-plastic surviving liver cells, with bile duct proliferation and an appearance of liver-cell formation from proliferating bile ducts. An additional finding in a number of cases was a phlegmonous inflammation of parts of the gut; this was always associated with ascites and was evidently a terminal phenomenon.

The "early" type of jaundice, which generally occurs during intensive arsenotherapy within two weeks of commencement of treatment, has been found to present different laboratory findings and pathological pictures. Beattie and Marshall (1944) quoting Gutman and Hanger (1941) and Naunym (1919) state that there is an increase in the total blood cholesterol, cholesterol esters, and blood phosphates, with "bile thrombi" and cholangitis in liver biopsy specimens.

DIAGNOSIS.

Diagnosis is usually easy when the patient is known to be receiving anti-syphilitic treatment. Difficulty may arise if the patient goes to be examined by another physician, but tactful questioning and a careful examination for evidence of injection marks overcomes this drawback.

Pre-icteric stage.

Once the patient has started his injection therapy a specimen of his urine is examined for bile at each visit. It is also useful to make inquiries about any gastric symptoms, particularly anorexia, pains in the joints (especially behind the knees and in the shoulders) etc.. By employing a policy such as this, early symptoms which the patient may not think worthy of mention are immediately brought to the notice of the medical officer and the appropriate steps taken. Particular care is

required at the "danger period", namely the 12th to 17th weeks of therapy.

The first complaint may be of gastric upset. Nausea, anorexia and vomiting may occur. A common early sign is muscular stiffness and is felt in the tendons of the large muscles around the knee and shoulder joints and where the hamstring muscles are attached to the pelvis. The patient often gives a history of "rheumatism in the morning" which improves as the day wears on and recurs if he rests. Also, very characteristically, it may be noticed on climbing stairs.

Often it appears to start like a "cold". Others may complain of a feeling of lassitude. Some may report "dark urine" or pale stools.

Patients with such symptoms must be carefully watched and it is advisable to send 5 cc of blood for estimation of the icteric index. An icteric index above 5 would suggest a latent jaundice.

Urobilinogen can be found in the urine for some days or weeks before clinical jaundice appears.

Icteric stage.

Once jaundice appears both patient and doctor are out of the wood.

The icterus usually manifests itself first in the conjunctivae with later tinging of the skin. In very mild cases icterus of the conjunctivae only may be present.

The urine is high coloured and should be examined for bile pigments and salts. The stools will be pale. Bradycardia may be found.

Marshall (1943) has seen urticaria in a few cases. He draws attention to the patient often feeling much improved once the jaundice has appeared. He has found that loss of weight and depression may be prominent features in the severer cases.

The liver should be examined for enlargement and tenderness. Marshall found that even in the mild cases there was usually some slight clinical enlargement of the liver and that the spleen was sometimes palpable.

Marshall (1943) states that the blood chemistry did not show any really significant changes which could be used to differentiate infective from so-called toxic jaundice. Apart from a rise in the serum phosphatase and bilirubin and a slight rise in cholesterol, there was nothing of note. Anderson (1943) supports this view.

Beattie, Herbert et al (1944) think changes in plasma proteins in disease of the liver are of great significance. They found irreparable liver damage had occurred if jaundice persisted for more than 2 months or the plasma albumin fell below 2 gm.% They state that estimation of the amount of bilirubin phosphatase, albumin and globulin in the plasma from a single blood specimen usually provides as much diagnostic and prognostic information as can be

obtained from more elaborate tests of liver function.

Marshall found that the blood was usually quite normal in erythrocyte, leucocyte and differential cell counts.

Liver Function Tests:

a) The icteric index is a measure of the yellow colour in the serum, which is mainly due to bilirubin. A solution of potassium chromate is used for comparison. The normal is about 5. Clinical jaundice gives values above 15 and latent jaundice between 5 and 15. Although not so reliable as the Van den Bergh reaction, the icteric index suffices as a routine test of liver function in arsenotherapy jaundice and it is seldom necessary to employ other tests. The following tests have also been recommended by various workers.

b) If a more sensitive test is required or doubt exists as to the exact nature of the jaundice the Van den Bergh reaction is used. By means of this test small amounts of bile pigment in the blood can be detected. The quantitative Van den Bergh reaction is of value in detecting latent jaundice, and in assessing the progress of a case of manifest jaundice.

c) The levulose -tolerance test. In this test 30-50 gm. (according to the patient's weight) are given in water, and the blood sugar examined before the test, and at half, one and two hours after it.

With a normal liver the blood sugar curve should show no rise above the fasting level greater than 30 mg. per 100 cc.; any higher rise in blood sugar indicates liver insufficiency. Diabetes mellitus invalidates the test.

d) The Hippuric acid Test. This test, devised by Quick in 1936, is a measure of the power of the liver to convert benzoic acid to hippuric acid and is considered to be an index of the "detoxifying" power of the organ.

The hourly excretion of hippuric acid is remarkably constant in the normal adult who will excrete about 3 gm. of sodium benzoate (in the form of hippuric acid) in 4 hours.

This amount, viz: 3 gm., is chosen as the average normal for calculating the output in terms of the percentage of normal . Excretion of over 90% of this amount is regarded by Quick (1940) as non-pathological.

Briefly, the two methods employed are:-

(1) Oral method. Sodium benzoate (5·9 gm. in 30 c.c. water) is given by the mouth the bladder is emptied, and the urine is collected after 4 hours (or collecting for 4 hours complete hourly specimens). The hippuric acid in all this urine is now precipitated from it by conc. H.Cl., dried and weighed; normally 3·0 gm. (as sodium benzoate) is excreted and the results are expressed as a percentage of

this figure.

(2) Intravenous method. This is especially useful in cases of vomiting. 20 cc. of a 10% solution of sodium benzoate is given intravenously. Further procedure is as above.

Snell and Plunkett (1936) and Gordon (1943) found that the oral test is reasonably accurate and satisfactory, but Mateer et al (1942 and 1943) consider the intravenous method to be more accurate.

The stages at which it is suggested the test should be applied are, when the jaundice is at about its height, when it has almost disappeared and after 2 - 4 weeks convalescence when the jaundice has totally disappeared.

Therefore it can be seen that this test is of x value during the course of the jaundice, and in establishing the presence or absence of liver impairment in the convalescent stage prior to the recommencement of arsenotherapy. Anderson (1943) feels that any reading below 3 gm. during anti-syphilitic treatment is an indication for caution. He points out that the possibility of over-frequent administration of sodium benzoate causing damage to the liver on its own, cannot be ignored.

DIFFERENTIAL DIAGNOSIS.

In cases of jaundice associated with syphilis the type of jaundice must be differentiated as the treatment will vary in each case. For example, jaundice due to the disease itself (early acute syphilitic hepatitis, tertiary lesions of the liver, gumma of the pancreas etc.) respond well to cautious anti-syphilitic therapy, but in arsenotherapy hepatitis arsenic and bismuth are strongly contra-indicated. It is important to keep in mind a condition of hepato-recurrence due to the organisms reattacking the liver following inadequate treatment, from insufficient dosage of the drugs or irregular attendance by the patient.

In a case associated with fever, Weil's disease must be ruled out by the history and the specific agglutination test which becomes positive in the second week.

Finally, it is necessary to point out that not all cases of jaundice in a venereal diseases clinic may be due to the above causes and that obstructive jaundice and haemolytic jaundice must be borne in mind. The history, clinical findings and laboratory tests will help to differentiate these diseases from arsenotherapy jaundice.

CLINICAL COURSE.

Prodromal period.

In Marshall's experience jaundice appeared at

any time from a few days to several weeks after the first symptoms. Peters et al (1945) found that the average length of the prodromal period was 7 days but could be as long as 6 weeks.

There may be a combination of the following symptoms:- lassitude, pains in the joints (especially shoulders), nausea, vomiting, anorexia, epigastric pain, flatulence and coryza. However, a notable feature in many cases of arsphenamine jaundice, pointed out by Anderson, is the absence of febrile reaction or constitutional signs and symptoms, other than nausea and anorexia, as opposed to an obvious constitutional upset before the onset in other forms of jaundice. Of Peters' cases, a surprising number were symptomless both before and after the onset of the jaundice.

The patient may complain that his urine is "dark". Excess of urobilinogen in the urine is demonstrated by a positive Ehrlich's aldehyde test.

Peters and his co-workers found that diarrhoea was uncommon. In a few cases they reported transient skin rashes - erythematous, urticarial or purpuric in nature - which they believed were due to metabolic disturbances rather than sensitivity to arsenic. Marshall has seen urticaria in a few cases and in his experience about half the cases in which sub-clinical jaundice was suspected progressed to clinical jaundice.

Stage of Jaundice.

Peters et al noted that the establishment of clinical jaundice often marked the end of subjective symptoms even although the colour might continue to deepen for a few days. Confinement to bed after the first few days was reluctantly accepted by many patients.

Liver enlargement is usual in moderate and severe cases. Neither Marshall or Peters found considerable enlargement of the organ. Both workers found enlargement of the spleen and Peters has pointed out that it was invariably associated with some degree of fever but could find no relationship between splenic enlargement and hepatic enlargement or severity of the jaundice.

The urine contains a variable quantity of bile-salts and pigments and the stools are pale. Diarrhoea is unusual (Peters et al).

Marshall and Peters have reported that a little ascitic fluid was detectable for a short time in the worst cases some of whom eventually developed cirrhosis.

In three of the cases studied by Peters and his colleagues there developed a mild peripheral neuritis. In this connection, it is interesting to note that various workers have reported neurological complications in infective hepatitis. In an article by Lescher (1944) on this question, Brain (1943) is

is quoted as reporting the occurrence of convulsions, hemiplegia and mild poly-neuritic signs preceeding the onset of the disease. Stokes et al (1945) describe mental depression, coma, delirium, convulsions and incontinence during the disease; and draw attention to the short interval that often elapses between the first onset of mental change and death.

Byrne et al (1945) noted the occurrence of meningitis, peripheral neuritis and, less constantly, myelitis. Cameron (1943) found that the only neurological sign was a temporary paresis of accomodation. Newman (1942) refers to the occurrence of severe headache. Most of these workers believe that the hepatitis and nervous complications are but two phases of the same disease.

Kampmeier (1944) has not found evidence to support the opinion that false-positive serologic tests could be ascribed to jaundice. Recently, however, Waelsch described a case of infective hepatitis with transient biological falsely positive Wassermann and Kahn reactions. They refer to the widespread belief that this occurs fairly often in hepatitis, and point out that the literature does not support this opinion.

Although complete recovery is the rule, cases of subacute yellow atrophy or acute yellow atrophy may develop. Marshall had 2 cases of the former, both of

whom recovered, and one of the latter who died. After starting in the usual way the patient becomes very ill in about a week or two. There is rapidly deepening jaundice and cholaemic symptoms, or ascites may be a prominent feature.

The duration of the disease will depend on the severity of the attack. In the milder cases it may be a matter of a week or so, while in the more severe attacks the patient may take from 4 - 8 weeks to return to normal colour and may have transient periods of deepening of the jaundice (Marshall).

TREATMENT.

A. Prevention.

1) For a time it was the habit to give routine glucose before injections, but Marshall (1943) did not think that it had much effect. It could be given orally as glucose-D just before the injection or intravenously along with the arsenical.

2) Curtis (1942) has shown that increasing the dosage of neoarsphenamine increases the amount of jaundice. Reducing the amount of arsenic by the use of mapharside appears to reduce the incidence.

3) Adequate sterilization of syringes by heat (preferably autoclaving) has already been discussed in the section dealing with aetiology.

4) Beattie and Marshall (1944) suggest the prophylactic use of the sulphur-containing amino-acids as dietary supplements. They found methionine to be

the most effective of these preparations. This is expensive, but milk (containing casein) can be recommended to the patient.

B. Latent Jaundice.

Should a patient complain of any suspicious prodromal symptoms it is advisable to examine the urine for bile and send a sample of blood for estimation of the icteric index.

Marshall recommends the stopping of arsenic treatment and continuation with bismuth in heavier doses when subclinical jaundice is suspected. Forbes (1944) believes that bismuth therapy be continued even during the stage of jaundice.

Intravenous "drips" of solutions of glucose have been suggested during this stage.

C. Stage of Jaundice.

There is no specific treatment for arsenotherapy and therapy has been conducted along the lines recommended for infective hepatitis.

1) STOPPAGE OF ANTI-SYPHILITIC THERAPY:

Lees (Dunlop, Davidson and McNee 1945) advises that all therapy with heavy metals (arsenic and bismuth) be discontinued for at least 3 months. Most venereologists agree with this view despite the opinions of Marshall and Forbes mentioned above.

2) REST:

As previously mentioned these patients often feel much improved once icterus has appeared and they may accept in-patient therapy with reluctance.

However, Marshall advises rest in bed and warmth in the early stages and consequently the patient should be urged to enter hospital. If the condition is thought to be mild and the patient does not wish to leave his occupation or is reluctant to enter a venereal diseases ward this rule need not be enforced. He should be kept under daily observation and advised admission if any worsening of his condition is noted.

The duration of his stay in hospital will depend on the severity of the disease, Witts found that it was about 14 days in cases of infective hepatitis.

Marshall found that it was not harmful to let his patients up for a little gentle exercise once they began to recover. Peters et al (1945) kept their patients in bed until the serum (bilirubin) level had fallen to below 5 mgms. per 100 cc. and did not allow them up fully until it was below 2.5 mgms. per 100 cc.

3) DRUGS.

A brisk saline purgative the well-known Gregory's powder can be given at the onset and repeated.

Glucose is given, but as already mentioned, Marshall did not believe it had much effect. It is given as glucose lemonade, glucose-D or by intravenous infusion.

Treatment with a combination of glucose, insulin and ascorbic acid has been recommended in infective hepatitis and MacDonald (1943) quoted Bell who described striking results with this form of therapy in cases of arsenotherapy jaundice. The method was to give up to 5 ounces of glucose orally each day, 10 units of insulin twice daily and 50 mgms. ascorbic acid thrice daily. MacDonald used it in five cases of infective hepatitis and obtained complete remission of all symptoms and signs within 3-4 days in three patients.

4) DIET.

Until recently a diet containing a high percentage of carbohydrate, and a low content of fat and protein was given in cases of jaundice. Dunlop, Davidson and McNee (1946) now recommend that an adequate amount of protein, particularly in the form of skim milk, should be given except in the early acute stages of disease as recent researches have shown that (a) the liver plays an important part in the production of the essential plasma proteins, and (b) fatty degeneration of the liver cells can be prevented by casein, the active agent of which is the amino-acid, methionine. They advise that "fats should be definitely restricted as bile salts, which may be secreted in diminished amount by the damaged liver, are essential for their emulsification and digestion". They draw attention to uncooked fats, such as butter and milk, being less harmful

than "cooked fats".

It is interesting to note that as early as 1916 Westrope had claimed that a milk diet, the casein of which is now known to be rich in methionine, given twenty-four hours prior to the administration of arsphenamine reduced the immediate toxic effects of the drug.

Much work has been done recently on the protective action of the sulphur-containing amino-acids on the liver. In 1940 Messinger and Hawkins showed that a high-protein diet can prevent bilirubinaemia and liver damage in dogs after weekly intravenous injections of mapharsen (mapharside); a high fat diet appeared to increase the degree of liver damage. Miller, Ross and Whipple (1940) and Miller and Whipple (1942) have demonstrated that methionine, and to a lesser extent cysteine and cystine, protects the liver against damage by chloroform. They found that the non-sulphur containing amino-acids conferred no protection. Himsworth and Glynn (1944) have shown that a dietary deficiency plays some part in the so-called trophpathic hepatitis of animals.

More recently the use of these amino-acids in the treatment of post arsphenamine jaundice has been reported upon by Beattie and Marshall (1944) and Peters et al (1945).

The former workers using four preparations

(casein digest, casein digest reinforced with cystine, cystine and methionine) found that no effect on the overall incidence of liver damage could be claimed. They record, however, that certain of the preparations were markedly effective in (a) shifting the time of peak incidence of liver damage towards the end of the second course of anti-syphilitic treatment or later; (b) moderating the severity of the liver damage when this did occur. The effect of casein digest reinforced with cystine was found to be less than that of an equivalent quantity of synthetic methionine; cystine produced an effect similar to that of methionine only when given in large quantity on the day of the arsenical injection. Although the average daily intake of protein (100 gm) represents about 2 gm. each of methionine and cystine, they recommended that persons undergoing anti-syphilitic treatment should receive dietary supplements as it is well known that the borderline between adequate and inadequate quantities of the various essential food constituents may be narrow.

In their series of experiments Peters et al used three preparations, namely, cysteine ester hydrochloride, casein (made up in the form of biscuits) and al-methionine. Clinically cysteine and methionine appeared to exert a slight but

beneficial effect. Casein failed to exert any beneficial effect which they attributed to either the absence of sufficient methionine or the over-loading of the deaminative mechanisms of the damaged liver cells resulting from the absorption of the other amino-acids present in the casein. They found that the patients receiving casein biscuits did not get much more than 1·7 gm methionine daily which is probably an inadequate amount. As more of these biscuits could not easily have been taken in addition to the ordinary diet they do not consider them as a satisfactory therapeutic measure.

Experiments on the use of choline chloride in the treatment of infective hepatitis have been reported. The parent substance of acetyl choline, it is now regarded as an important constituent of the vitamen B complex which is concerned in the transport of fat in the body and is essential for the health of the liver and kidneys.

Results are uncertain so far and the following is a quotation from an Editorial article in the British Medical Journal (1945). "The conclusion from the literature is that the effective dose of choline chloride for the treatment of disease of the liver and kidneys, and for disturbances of nutrition or metabolism, is likely to be at least 100 mgm. per kg. of body weight, or 6 gm. a day in an adult man, and it might be three or four times as high. In

other words, the curative dose of choline chloride must approach close to the toxic dose. The danger is a sudden flooding of the circulation with choline and subsequent depression of the heart and blood pressure. This has been demonstrated with as little as 0·5 gm. taken on the fasting stomach in man".

Thus it would appear that methionine is the most useful of these preparations to give during the treatment of arsenotherapy jaundice or as a prophylactic against the disease. Unfortunately the preparation is extremely costly and its general use among patients attending a venereal diseases clinic is out of the question. However, as Beattie and Marshall have pointed out, a diet with a daily intake of 100 gm. protein will probably contain adequate quantities of these protective substances. An adequate consumption of milk and cheese can be recommended to the patient.

While on this question it should be noted that various workers have shown that arsenoxide is rendered non-lethal if it is allowed to combine with a sulphydryl-containing compound such as cystine. It had been demonstrated in 1925 by Voegtlin that neoarsphenamine concentration found in the blood during antisyphilitic therapy was not lethal to the spirochaete until it had been oxidised to arsenoxide. Eagle (1939) suggested that arsenoxide

killed the spirochaete by combining with sulphydryl groups concerned in the respiration of the cell (glutathione) is one such compound). The probability is that arsenoxide is toxic to the liver cell through a similar mechanism. The suggestion is therefore made by Beattie and Marshall (1944) that the beneficial effect of cystine given in mass doses on the day of the arsenical infection is mainly effective by acting as a chemical detoxicating agent for the arsenoxide, thus relieving the liver from the effects of arsenoxide for some time to follow. Consequently they do not consider that dietary supplements during arsenotherapy should take the form of large quantities of cystine as this may reduce the chances of the anti-syphilitic treatment being successful.

Peters et al (1945) consider that the patient can be allowed normal diet when the icterus is almost away and the patient is clinically well.

5) CONVALESCENCE:

Patients often take a long time to get really well after even a mild attack of jaundice. Marshall recommends a rest for a week or two and believes these patients should be kept off fully duty for at least a month after returning to their jobs. He states that alcohol is absolutely contra-indicated during at least three months after an attack.

RELAPSE.

Many workers claim that an attack of infective hepatitis confers complete immunity but Witts (1944) states that recurrence of the jaundice can occur in 2% of the cases and Hartfall reports that relapses in this condition are within his experience. In their series of 468 cases of arsenotherapy jaundice Peters et al (1945) experienced 30 relapses while Marshall (1943) has only seen 4 cases. These relapses were accompanied by the usual prodromal symptoms with one difference, namely a sharp attack of diarrhoea. Peters et al found that the time of onset was 20-30 days after the first attack. Marshall's cases occurred after about 30 days. They found it difficult to draw line between an exacerbation of the jaundice and the relapse occurring after a time of apparent well-being.

The causes of exacerbation and relapse do not appear to be understood. Some have appeared in patients who have received arsenic again and in others who have not resumed anti-syphilitic therapy. It may be that the inability of a liver, which has been damaged or has not completely recovered from an attack of jaundice, to tolerate alcohol or other foods, particularly those of a fatty nature, may, like arsenic precipitate relapse. Some have suggested super-infection with the virus of infective hepatitis and in Marshall's experience relapses occurred after

an interval of about 30 days only when the patients had been treated in wards where infective hepatitis cases were to be found. Beattie and Marshall (1944) amplified this view but Peters and his co-workers (1945) failed to confirm it.

RESUMPTION OF ARSENOTHERAPY.

Lees (Dunlop, Davidson and McNee 1946) states that arsenic and bismuth must be discontinued for at least 3 months once jaundice is established.

However, as the treatment of syphilis must not suffer because of jaundice Marshall (1943) believes it is important to continue bismuth in heavy doses throughout the course of the disease and not to give any "rest periods" until arsenic is resumed. He is supported by Forbes. Peters et al stopped all treatment with arsenic and bismuth in their cases. Marshall quotes Stokes as having described cases in which arsenic has been given throughout the course of jaundice without ill effect.

Therefore arsenic is withheld during the jaundice and for some months afterwards and I believe most venereologists agree that bismuth should be stopped as well in spite of the views held by Marshall and Forbes. The actual date of resumption will depend on the severity of the jaundice and the possibility of syphilis relapse. When resumption of therapy is decided upon small doses of bismuth are tried and, if these are tolerated, gradually

increasing doses of arsenic are given. Most workers appear to agree that the arsenic should not be withheld for more than three months . Rankin and Marlow (1940), however, say that arsenic should only be given again if the danger of syphilis outweighs the danger of further hepatic damage.

PROGNOSIS.

The prognosis is extremely favourable, most cases recovering completely.

The complications to be most feared are subacute yellow atrophy and acute yellow atrophy. As previously stated Marshall found that recovery took place in the former condition but sooner or later some degree of hepatitic cirrhosis set in. Cases going on to acute yellow atrophy are usually fatal.

Dible et al (1943) have demonstrated that patients in whom the disease is prolonged often develop liver cirrhosis. Rankin and Marlow (1940) studied cases up to nineteen years after jaundice and found signs of subclinical liver damage in some cases, although cirrhosis was rare.

Marshall believes the ultimate prognosis in present cases will not be known for some years.

PART I.

THE CASES.

INTRODUCTORY NOTE

In this part of the thesis are given descriptions of each case. These descriptions are, of necessity, brief and only matter having some bearing on jaundice has been included.

Each history is recorded under the patient's official number in the Clinic and not under his name.

THE DRUGS USED.

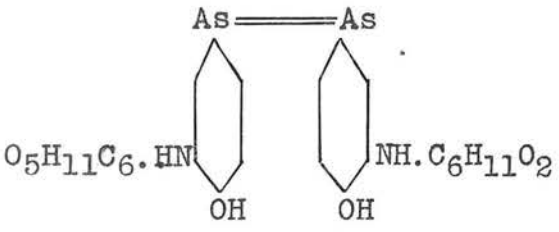
Below is given a short outline of the more important antisyphilitic drugs mentioned throughout the text.

1) ARSENIC.

Two types of organic arsenic are used, viz. trivalent and pentavalent.

A. TRIVALENT.

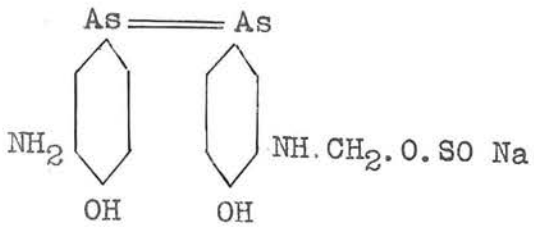
Stabilarsan (arsphenamine diglucoside) which has the formula:



It is issued in ampoules in the form of a sterile solution in 50% glucose. The dosage is 0.15 to 0.6 gm. and it can be given intravenously or intramuscularly.

Neo-arsphenamine ("914") is a yellow powder issued in sealed ampoules. The powder is dissolved in 10 cc distilled water and administered intravenously.

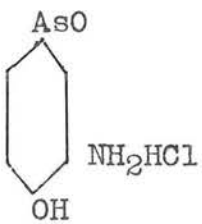
The dose is 0.15 to 0.6 gm. It is issued under various proprietary names e.g. Novarsenobillon, Neo-kharsivan and Evarsan. The formula is:



Sulpharsphenamine is a light yellow powder containing 19% trivalent arsenic, easily soluble and given by intramuscular administration. Proprietary preparations are such as Kharsulphan and Sulphostab.

B. ARSENOXIDE.

Marpharside (Marpharsen) is the hemi - alcoholate of meta-amino parahydroxyphenyl-arsine oxide and has the formula:



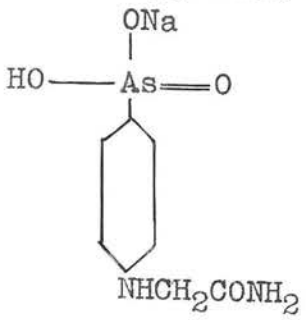
It is supplied in ampoules as a white powder containing 29% trivalent arsenic and is fairly stable.

The powder is dissolved in distilled water and given intravenously. The dose is 0.02 to 0.04 gm twice weekly. Its efficiency is said to be about ~~ten~~ six to eight times that of neo-arsphenamine.

Neohalarsine. This is 3-amino-4-hydroxyphenyl-arsine oxide tartrate dihydrate. It is issued in ampoules as a white powder and is given intravenously dissolved in 10 cc distilled water. The dose is 0.06 to 0.09 gm twice weekly

C. PENTAVALENT.

Tryparsamide. This compound contains 25% pentavalent arsenic. It is issued as a white powder in sealed ampoules. The powder is dissolved in 10 cc distilled water and given intravenously. The dose is 1.0 to 3.0 gm once weekly. It is the drug of choice in cases of neuro-syphilis. The formula is:



Acetylarsan. This is the diethylamine salt of acetarsol. It is supplied in ampoules in an aqueous solution, each cc of which contains the equivalent of 0.05 gm arsenic in pentavalent form.

A special solution for infants contains 0.02 gm per cc. The dose for adults is 3 cc. It is given by intramuscular injection. It is used in cases of neuro-syphilis, cases intolerant to drugs of the arsphenamine series and where the condition of the patient's veins renders intravenous technique very difficult. The potency falls below that of the arsphenamines.

2) BISMUTH.

These preparations are classed according to solubility and solvent. They are given intra - muscularly.

Throughout the text where the term "bismuth" is used this refers to Bisglucol, a preparation containing 0.2 gm in each cc of isotonic glucose

solution.

The other preparations are given their proprietory names. Of these, the two most commonly used are a) Bisantol (unit dose 2 cc) and Bicreol (unit dose 2 cc) which are suspensions in oil, and b) NeOcardyl (unit dose 2 cc) which is an oily solution.

3) MERCURY.

The preparation favoured is Collosol mercury sulphide. The dose is 2 to 5 cc intravenously.

OTHER DRUGS.

Iodides. Administered orally as sodium or potassium iodide in doses of 10 to 60 grains thrice daily. A favourite method was to prescribe it as Pil. tert. iod. Co. (one pill thrice daily). A further preparation was 10 cc Collosol iodine administered intravenously.

Vitamins. Vitamen C (100 mgms) and Vitamen B_1 (30 mgms) were given by intramuscular injection.

"Mist. Jaund. Co." This prescription was issued to several patients. The composition was as follows:-

Sod. salicyl.		
sod. bicarb.		
sod. thiosulph.	aa grs	XV
tinct. nux. vomica	m	V
tinct. rhei	m	X
aq. cinamoni		qs
aqua ad	drs	1V

Four drahms of this mixture were given thrice daily for ten to fourteen days.

SECTION A. MALES.

Case No. C 8225. Age 42. Miner.

Admitted on 1.1.37. as a case of syphilitic iridocyclitis (left eye).

Treatment was commenced on the following day and the total dosages of drugs prior to jaundice were: 5·7 gm Neokharsivan and 3.3 gm bismuth.

A slight icteric tinging of the skin appeared 14 days after the first injection of the second course and within 111 days of the commencement of antisyphilitic therapy. The urine did not contain bile at this time, but a deepening of the jaundice took place over the next three weeks and bile appeared in the urine. No history of prodromal symptoms or alcohol. No septic foci were found. The liver was not enlarged. He continued as an out-patient.

Treatment consisted of 20 cc. injections of glucose solution (20%) and sodium thiosulphate. Arsenic was withheld.

The duration was 33 days.

Bismuth injections were continued throughout the jaundice. Stronger anti-syphilitic therapy was introduced later and further progress was satisfactory.

Case No. C 8407. Age 33. Theatre attendant.

Admitted on 15.2.37. as a case of sero-positive primary syphilis.

Treatment started on the same day and he received 7.35 gm. Neokharsivan and 3.9 gm. bismuth prior to the appearance of jaundice.

The jaundice appeared 31 days after the thirteenth injection of the first course, and 158 days after the commencement of therapy.

Prior to the jaundice there was a history of shoulder pains and a slight dermatitis of the legs about three weeks before.

The urine contained bile, the icteric index was 21, and the van den Bergh test gave a direct reaction, delayed.

He was treated as an outpatient and advice on diet and aperients was given. Three injections of 0.9 sodium thiosulphate in 10 cc. sterile distilled water were administered.

The jaundice was very mild and lasted 4 days.

Anti-syphilitic treatment was resumed 7 days after the disappearance of the icterus. Bismuth only was given and progress was satisfactory. After the seventh injection of this post-icteric course he was transferred to a clinic in England.

Case No. C 8436. Age 41. Labourer.

Admitted on 22.2.37. as a case of Tabes dorsalis.

Treatment was commenced within three days and the dosages prior to jaundice were 27 gm. Trypars-amide and 3.9 gm. bismuth.

Jaundice developed 21 days after the second injection of the second course, and within 161 days of the beginning of treatment.

The prodromal stage lasted 11 days and the complaints were "stomach upset" and "dark urine". When he reported for examination icterus of the conjunctivae was found and the urine contained a trace of bile. No hepatic enlargement. No septic foci. No history of alcohol.

The disease ran a mild course and disappeared within 7 days of its onset. He attended as an out-patient.

Treatment consisted of intravenous injections of calciostab, sodium thiosulphate and glucose. Arsenic and bismuth were stopped.

Anti-syphilitic therapy was recommended 42 days after the disappearance of jaundice. At first, bismuth only was given and tolerated in doses of 0.3 gm. per week. Later, tryparsamide was intro-duced without ill effect. Progress was satisfactory.

Case No. 8564. Age 24. Student.

Admitted on 22.3.37. as case of sero-positive primary syphilis

In the pre-icteric phase of treatment he received 7.95 gm. Neokharsivan and 3.9 gm. bismuth.

Jaundice appeared 7 days after the third injection of the second course, and within 136 days of the start of treatment.

There were no prodromal symptoms. The course of the disease was mild, with bile in the urine, but no hepatic enlargement. No septic foci. No history of alcohol. Attendance as an outpatient was continued. Duration: 7 days.

The arsenic and bismuth injections were stopped and he received three injections of sodium thiosulphate each made up in 20 cc. glucose solution (20%)

Bismuth therapy was resumed 4 days after the disappearance of the jaundice. Stabilarsan was introduced in the third course and further progress was satisfactory.

Case No. C 8661. Age 28. Seaman.

Admitted on 14.4.37. as a case of sero-positive primary syphilis

Prior to admission the patient had been receiving arsenotherapy for some weeks. Before jaundice the totals were: 14.0 gm arsenic (novarsenobibillon Neokharsivan) and 3.0 gm bismuth.

Jaundice appeared 36 days after the tenth injection of the second course and within 98 days of the beginning of anti-syphilitic treatment. There were no prodromal symptoms. Bile was present in the urine. No septic foci. No history of alcohol. After this visit he failed to report again for about one month so that the duration was difficult to ascertain, as the jaundice had disappeared during this time, but it apparently lasted a few days only.

Anti-syphilitic therapy was resumed on this first visit since the onset of the attack of jaundice with 0.3 gm. bismuth weekly. Mapharside was introduced within four months of the jaundice without ill effect and three months later he was transferred to another clinic.

Case No. C 8720. Age 20. Joiner.

Admitted on 25.4.37. as a case of Secondary Syphilis.

Treatment was commenced with Neokharsivan and bismuth, and the totals prior to jaundice were 3.3 gm. of each drug.

The jaundice appeared 67 days after the eleventh injection of the first course, and within 137 days of the start of treatment.

There were no prodromal symptoms. A history of alcohol was not obtained, but he had three carious teeth. Bile was present in the urine. No liver enlargement. Duration: 10 days. Treated as an outpatient.

Treatment consisted of injections of sodium thiosulphate made up in a solution of glucose. Arsenic and bismuth were withheld. Mist. Jaund. Co. was prescribed.

Neokharsivan and bismuth were given 20 days after the disappearance of jaundice, but as albuminuria occured, acetylarsan was substituted for these drugs. Further progress was satisfactory.

Case No. C 8760. Age 64. Labourer.

Admitted on 5.5.37. as a case of Tabes dorsalis

Before jaundice appeared he had received 7 gm. Tryparsamide and 1.2 gm. bismuth.

The icterus developed 15 days after the seventh injection of the first course and within 44 days of the beginning of treatment.

There were no prodromal symptoms. No history of alcohol. No septic foci. The urine contained much bile, the icteric index was 110 and the Van den Bergh test gave a direct reaction, biphasic. No liver enlargement.

The duration was 44 days.

Treatment was ambulant and consisted of intravenous injections of sodium thiosulphate in solutions of glucose.

Bismuth therapy was commenced on the ninety-eighth day after the disappearance of jaundice. On this day the icteric index was 25 and the Van den Bergh test gave a direct reaction, biphasic. Progress was satisfactory, but he developed auricular fibrillation and cardiac failure in November, 1938.

Case No. C 8771. Age 49. Gardener.

Admitted on 7.5.37. as a case of Tabes dorsalis.

Before jaundice he had received 21 gm. Tryparsamide and 5.7 gm. bismuth.

About three weeks after the last injection of the first course a letter was received from the patient stating that he had developed jaundice. The duration was uncertain. No history of alcohol. No septic foci.

When he returned to the clinic one month later there was no evidence of the icterus. Treatment was commenced at this visit with bismuth and further progress was satisfactory.

Case No. C 8965. Age 32. Chauffeur.

Admitted on 21.6.37. case of Tertiary Syphilis.

Prior to the development of icterus he received 4.35 gm. Neokharsivan and 3.8 gm. bismuth.

Jaundice appeared 31 days after the thirteenth injection of the first course, and within 146 days of the commencement of treatment. For two to three weeks before-hand he had suffered from dyspepsia and noticed that his urine was "discoloured".

On examination icterus of the conjunctivae was found. There was no alcoholic history and no obvious septic foci were present. The disease ran a mild course over 35 days and he attended as an outpatient.

Arsenic and bismuth were withheld during the first stage of jaundice and injections of sodium thiosulphate in glucose solution were given once weekly for four weeks.

Anti-syphilitic therapy was restarted 7 days before the disappearance of the jaundice without ill effect. Further progress was satisfactory.

Case No. C 8997. Age 42. Basket-Maker.
Admitted on 25.6.37. as a case of Latent Syphilis.

Prior to jaundice he received 4.95 gm. Neokharsivan and 3.5 gm. bismuth.

The icterus appeared 7 days after the second injection of the second course and within 131 days of the beginning of treatment. He experienced nausea and slight abdominal pain during the previous two weeks, and had suffered from constipation for eight weeks. The urine contained bile, the icteric index was 80 and the Van den Bergh reaction was biphasic. There was no history of alcohol.

He was admitted to the ward and was put on the low fat, high carbohydrate diet for jaundice. Injections of sodium thiosulphate in glucose solution were given and Mist. Jaund. Co. was prescribed. While in the ward he developed diarrhoea. The highest reading of the icteric index was 120.

The duration of in-patient treatment was 31 days and the total duration of the jaundice was 72 days.

Antisyphilitic therapy was restarted 12 days after the clearing of the icterus. Bismuth was given at first, then neocardyl and finally bismuth. Arsenic was not resumed. Progress was satisfactory until he defaulted early in 1940. Later, notification was received that he had died (cause unknown).

Case No. C 9058. Age 18. Labourer.
Admitted on 8.7.37. as a case of gonorrhoea.

This patient was given prophylactic treatment with arsenic and bismuth as he had had recent intercourse with a known case of primary syphilis.

The totals received before jaundice were 1.8gm Neokharsivan and 1.2 gm. bismuth.

Jaundice developed 3 days after the eleventh injection of the first course and within 75 days of the beginning of treatment. There were no prodromal symptoms (but he had nausea after the first few injections of the treatment). No history of alcohol was obtained, but he was found to have scabies. The disease was mild and lasted 7 days. He continued as an out-patient.

Treatment consisted of injections of sodium thiosulphate once daily for three days. Arsenic and bismuth were withheld.

Bismuth therapy was resumed immediately the jaundice cleared and progress was satisfactory. He defaulted from treatment early in 1938.

Case No. C 9054. Age 32. Porter.

Admitted on 7.7.37. as a case of sero-positive primary syphilis

Before admission the patient had been receiving anti-syphilitic treatment. The totals given before jaundice were 2.15 gm. Neokharsivan and 1.4 gm. bismuth.

The jaundice appeared 2 days after the sixth injection of the first course and within 19 days of the beginning of treatment. For three days beforehand he suffered from nausea and vomiting. There was no alcoholic history, but he had boils in the axilla and on a finger about one to two weeks before the icterus. The faeces were clay-coloured. No liver enlargement was found. The disease was relatively mild and the duration was 4 days. He continued attending as an out-patient.

He was advised about diet and received two injections of sodium thiosulphate.

Before antisyphilitic therapy could be resumed he was transferred to another clinic shortly after the clearance of the jaundice.

Case No. C 9152. Age 21. Labourer.

Admitted on 28.7.37. as a case of sero-negative primary syphilis

The treatment prior to jaundice consisted of 3.04 gm. arsenic (Neokharsivan and one injection of mapharside) and 2.7 gm. bismuth.

The jaundice appeared 20 days after the first injection of the second course and within 125 days of the beginning of treatment. Nausea had been present for two days. No history of alcohol, but he developed an arsenical dermatitis which cleared away about a month before the attack of jaundice. The urine contained bile.

He was given advice about a low fat diet and instructed to remain in bed for a few days.

When he reported one week later jaundice was still present. He defaulted after this visit and did not return until February, 1944, when anti-syphilitic therapy with Novarsenobillon and bismuth was recommenced without ill effect. Duration of jaundice: uncertain.

Case No. C 9214. Age 66 Salesman.

Admitted on 9.8.37. as a case of Latent Syphilis.

Prior to jaundice he received Neokharsivan only, the total dosage being 3.6 gm.

The icterus developed 22 days after the twelfth (and last) injection of the first course, and within 134 days of the commencement of therapy. No prodromal symptoms and no history of alcohol. The urine contained bile and albumin (orthostatic albuminuria).

The jaundice was mild and at the end of three weeks there was no bile in the urine and the conjunctivae were only faintly tinged. Shortly after this there was a marked exacerbation in the condition and the liver was enlarged to two finger-breadths below the costal margin. Its edge was firm. The icteric index was 83 and the urine contained much bile. He was admitted and remained in the ward for 43 days. The van den Bergh reaction was biphasic. No crystals of leucin or tyrosin were found in the urine. The total duration of the jaundice was 76 days.

In the early mild stage arsenic and bismuth were stopped and he received injections of sodium thiosulphate. In the ward he was put on the special low fat, high carbohydrate diet for jaundice. He also received vitamen C and eleven 20 cc. (20%) injections of glucose. When discharged the icteric index was 25 and the urine contained a trace of bile.

Antisyphilitic treatment was restarted 42 days after the jaundice had disappeared. Neocardyl only was given. The liver was still two finger-breadths below the costal margin two months later. Treatment was continued for about a year and then potassium iodide was given. Four months after this he developed cardiac failure and was admitted to a medical ward for treatment.

Case No. C 9502. Age 40. Shop-keeper.
Admitted on 28.9.37. as a case of Latent Syphilis.

The treatment prior to jaundice consisted of 3.15 gm. Neokharsivan and 1.7 gm. bismuth.

The icterus appeared 7 days after the sixth injection of the first course and within 42 days of the beginning of treatment. There were no prodromal symptoms. When he reported, the conjunctivae were yellow and the urine contained bile. There were a few septic teeth.

He was advised about diet and received sodium thiosulphate given in 20 cc. glucose intravenously twice weekly on fifteen occasions. Mist. Jaund. Co. was prescribed.

The disease was mild but ran a lengthy course, the duration being 55 days.

Anti-syphilitic treatment was resumed with bismuth alone 7 days after the clearance of the icterus. Progress was satisfactory, but he defaulted about eleven months later.

Case No. C 9507. Age 23. Professional rootballer.

Admitted on 28.9.37. as a case of sero-negative primary syphilis.

This patient received Mapharside only prior to jaundice. The total dosage was 1.02 gm.

The icterus appeared 3 days after the eighteenth injection of the first course and within 66 days of the commencement of arsenotherapy. On reporting he was found to have icterus of the conjunctivae and bile in the urine. No history of alcohol.

Diet was advised and seven twice weekly injections of sodium thiosulphate in 20 cc. glucose solution were given.

The duration was 18 days.

Antisyphilitic therapy was restarted 91 days after the disappearance of jaundice, with stabilarsan and no ill-effects were experienced. Bismuth was also introduced in the third injection of this post-icteric course. Progress was satisfactory and he was later transferred to a London clinic.

Case No. C. 9555. Age 61. Shale-Miner.

Admitted on 7.10.37. as a case of Tertiary Syphilis (gumma of pancreas)

When the patient was admitted to the ward he was suffering from a severe attack of jaundice. The icterus was said to have developed about five weeks beforehand and a loss in weight amounting to two stones had been noted. Shortly before admission he experienced a severe attack of abdominal pain.

Bile was present in the urine, the icteric index was 160 and the liver was moderately enlarged. Radiological examination of the gall-bladder was carried out later, but with negative results. The total duration of the disease was about 75 days.

Treatment consisted of rest in bed, a low fat, high carbohydrate diet and the daily administration of magnesium sulphate as a purgative. Anti-syphilitic treatment with Neocardyl was commenced two days after admission. Potassium iodide was also given.

The patient's condition improved rapidly, there was an increase in weight and the icteric index was 12 on discharge from the ward.

Treatment was continued with Neocardyl, and acetylarsan and bismuth were introduced in the third course. Further progress was satisfactory, but he defaulted for a time in 1939 and finally in 1944.

Case No. C 9571. Age 52. Farmer.

Admitted on 9.10.37. as a case of Latent Syphilis.

The anti-syphilitic treatment prior to the development of icterus was 6.0 gm. Neokharsivan and 3.5 gm. bismuth.

The jaundice appeared 35 days after the first injection of the second course and within 146 days of the commencement of therapy. For about ten days before the onset there were vague shoulder pains. By the time the jaundice developed he had lost over a stone in weight. Bile was present in the urine, the icteric index was 17 and the van den Bergh gave a direct reaction, positive delayed. The month previously he had several very septic teeth removed.

Treatment in the prodromal stage consisted of withdrawal of the arsenic and bismuth and once weekly injections of sodium thiosulphate in 20 cc. glucose. In the stage of jaundice vitamen C in the form of tablets (one 50 mgm tablet twice daily) and by injection (Redoxon) was given.

The course of the disease was mild and its duration was 7 days.

Anti-syphilitic therapy was resumed 7 days after the disappearance of the jaundice. Bismuth was given at first and acetylarsan was introduced in the third course. Further progress was satisfactory.

Case No. C 9637. Age 39. Motor-driver.
Admitted on 20.10.37. as a case of Latent Syphilis.

Before jaundice had appeared he received 3.6 gm. Neokharsivan and 2.4 gm. bismuth.

The icterus developed 14 days after the thirteenth (and last) injection of the first course and within 144 days of beginning of treatment. Prodromal symptoms of nausea and slight abdominal pains were present for three days before the onset. On examination he was found to be mildly jaundiced but the urine contained much bile. There was no history of alcohol and no septic focus was discovered. The duration was 49 days.

Arsenic and bismuth were stopped and 2 cc. of Redoxon once weekly on five occasions was given.

Anti-syphilitic treatment was restarted within 4 days of the disappearance of the jaundice. Bismuth was used at first, but acetylarsan was introduced on the fourth course and Stabilarsan on the fifth course. Further progress was satisfactory.

Case No. C 9668. Age 60. Barman.

Admitted on 28.10.37. as a case of Latent Syphilis.

Anti-syphilitic treatment prior to jaundice consisted of 3.0 gm. Neokharsivan, 0.3 gm. Stabilarsan and 2.9 gm. bismuth.

The icterus developed 7 days after the eleventh injection of the first course and within 96 days of the beginning of treatment. There were no prodromal symptoms, but he had vomited on the mornings following the first few injections of the course. He was found to be mildly jaundiced and the urine contained bile. The duration was 21 days.

Diet was advised and he received injections of sodium thiosulphate and planovit. Vitamen C tablets were also given.

Bismuth therapy was commenced within 8 days of the clearance of the jaundice and acetylarsan was introduced on the fifth course. Further progress was satisfactory.

Case No. C 9682. Age 64. Unemployed.

Admitted on 30.10.37. as a case of G.P.I. (early).

Prior to jaundice he received 77 cc. acetylarsan (3.85 gm. arsenic) and two 1c.c. doses of neocardyl.

Icterus developed 7 days after the seventh injection of the second course and within 324 days of the beginning of treatment.

There were no prodromal symptoms. The jaundice was mild and bile was present in the urine. He had several very septic and decayed lower teeth. The duration was 14 days.

Three injections of sodium thiosulphate and Redoxon were given.

The treatment with acetylarsan was not stopped and the course was completed without ill effect. Sodium thiosulphate was given with each injection. Further progress was satisfactory but he defaulted from treatment near the end of 1939.

Case No. C 9716. Age 44. Policeman.

Admitted on 4.11.37. as a case of Latent Syphilis.

Treatment prior to jaundice was 5.25 gm. Neokharsivan and 2.0 gm. bismuth.

The icterus appeared 25 days after the eleventh (and last) injection of the first course and within 96 days of the beginning of treatment.

When he reported he stated that nausea and jaundice had been present for two weeks. There was no complaint of nausea now, but jaundice was still present and the urine contained bile. The icteric index was 25. The total duration was about 45 days.

He was advised a fat-free diet and was put on a course of ascorbic acid tablets (three 50 mgm. tablets daily for seven days).

Bismuth therapy was commenced 24 days after the disappearance of jaundice. However, there was a mild exacerbation of the icterus following this injection and treatment was withheld for two weeks. Bismuth injections were then resumed. He felt "squeamish" about two months later, but no jaundice occurred. Acetylarsan was introduced on the fourth course and further progress was satisfactory, until he defaulted from treatment in 1940.

Case No. C 9767. Age 45. Gardener.

Admitted on 12.11.37. as a case of Secondary syphilis.

Treatment before the appearance of jaundice consisted of 3.0 gm. Neokharsivan and 1.2 gm. bismuth.

The jaundice developed 90 days after the sixth injection of the first course. Shortly after the sixth injection he developed an arsenical dermatitis of the arms, groins, lower abdomen and back and was admitted to the ward for treatment. The dermatitis cleared but boils appeared. Before anti-syphilitic treatment could be resumed the jaundice manifested itself. There was a history of alcohol and marked oral sepsis was present. The disease ran a relatively mild course, but was prolonged, the duration being 60 days. At the onset the icteric index was 42 and the Van den Bergh reaction was positive, biphasic.

Treatment was injections of sodium thiosulphate in 20 cc. glucose solution twice weekly during the stage of jaundice. Two injections of 2 cc. Redoxon were given. He was instructed about a fat-free diet.

Bismuth treatment was resumed 21 days after the disappearance of jaundice. Acetylarsan was later given without ill effect and progress was satisfactory until he defaulted from treatment in 1939.

Case No. C. 9866. Age 25. Labourer.

Admitted on 3.12.37. as a case of Sero-positive primary syphilis.

Treatment was with mapharside and the total dosage before jaundice was 0.4 gm. There was a default of two months between the first and second injections.

Jaundice developed 5 days after the seventh injection of the first course and within 108 days of the beginning of treatment. The icteric index was 40. No history of alcohol. The duration was 15 days.

Treatment consisted of withdrawal of the drug, ascorbic acid tablets thrice daily and advice on diet.

Although the arsenical drug was stopped bismuth was substituted for it. Further progress was satisfactory but he defaulted after one month.

Case No. C 9886. Age 25 Motor-driver.

Admitted on 7.12.37. as a case of Sero-positive primary syphilis

Treatment before jaundice developed consisted of 5.1 gm Neokharsivan and 3.3 gm. bismuth.

The icterus appeared 34 days after the eleventh (and last) injection of the first course and within 150 days of the beginning of treatment. When he reported for examination icterus of the conjunctivae was present and the urine contained bile. He admitted taking alcohol and possessed a number of carious teeth. The disease ran a mild course of 18 days. (Three weeks before the jaundice he had an exfoliative type of dermatitis which cleared before jaundice developed).

A low fat diet was advised and he received injections of sodium thiosulphate, glucose and Redoxon.

Immediately the jaundice had cleared, anti-syphilitic treatment was resumed with bismuth. Progress was satisfactory, but he defaulted one year later.

Case No. C 9881. Age 35. Labourer.

Admitted on 6.12.37. as a case of Latent syphilis.

Treatment prior to jaundice consisted of Neokharsivan and bismuth, the total dosages being 1.2 gm and 0.8 gm. respectively.

Icterus developed 3 days after the fifth injection of the first course and within 17 days of the commencement of treatment. Just before its onset he complained of nausea. The urine contained much bile. The course of the disease was mild and the duration was 14 days. He had very septic teeth.

Treatment consisted of advice on a low fat diet and injections of sodium thiosulphate and planovit.

Progress was satisfactory, but he defaulted three weeks after the clearance of jaundice before antisyphilitic treatment was resumed.

Case No. D 66 Age 61. Labourer.

Admitted on 12.1.38. as a case of Tertiary Syphilis (leukophakia)

Treatment prior to icterus consisted of 8.4 gm arsenic (Stabilarsan and Neokharsivan) and 7.2 gm. bismuth.

The jaundice started 7 days after the tenth (and last) injection of the fifth course and within 316 days of the commencement of therapy. On examination he was found to have slight jaundice and bile in the urine.

The duration was 14 days.

He was instructed about a low fat diet and received ascorbic acid tablets (one tablet thrice daily for two weeks).

Further progress was satisfactory but he defaulted about a month after the jaundice had disappeared and before antisyphilitic treatment could be resumed.

Case No. D 87. Age 34. Bus-driver.

Admitted on 17.1.38. as a case of Secondary syphilis.

Prior to jaundice he received 6.15 gm. Stabilarsan and 5.7 gm. bismuth.

Icterus developed 4 days after the eighth injection of the second course and within 172 days of the commencement of treatment. The prodromal symptoms were abdominal pain and vomiting for three days. The jaundice was slight. The urine contained bile, the icteric index was 33 and the Van den Bergh reaction was biphasic. The duration was 10 days.

He was given a jaundice diet sheet and received injections of sodium thiosulphate, glucose solution and Redoxon. Arsenic and bismuth were withheld.

Antisyphilitic treatment was resumed with Neocardyl three days after the disappearance of jaundice, and Stabilarsan was brought in after six weeks. However, jaundice appeared again about thirteen weeks after the first attack. The liver was tender and slightly enlarged. He was admitted to the ward for three days, during which time he received the special diet, injections of sodium thiosulphate and glucose orally. The total duration of this second attack was 18 days.

Neocardyl was given thirteen days after the icterus cleared away and further progress was uneventful, but he defaulted from treatment early in 1940.

Case No. D 100. Age 24. Seaman.

Admitted on 19.1.38. as a case of Sero-negative Primary syphilis

Before jaundice appeared he had received 8.05 gm Stabilarsan and 4.4 gm bismuth.

The icterus developed fourteen days after the fifth injection of the second course and within 147 days of the beginning of treatment. On reporting he stated that his urine had been of a dark colour for the past week. On examination icterus of the conjunctivae only was found, but the jaundice was fully developed within a week and he was admitted to the Ward. The duration of the disease was 20 days and the time in hospital was 13 days.

He was put on a jaundice diet and injections of sodium thiosulphate, Redoxon and glucose were given. Arsenic and bismuth were stopped.

Progress was satisfactory but he defaulted one week after leaving the ward before antisyphilitic treatment was resumed.

Case No. D. 140. Age 39. Policeman.

Admitted on 25.7.43. as a case of Latent syphilis.

Anti-syphilitic therapy prior to the onset of jaundice consisted of 4.5 gm arsenic (Stabilarsan, Novarsenobillon) and 2.9 gm bismuth.

The jaundice developed five months after the beginning of treatment and followed the fourth injection of the second course. When he reported he stated he had had an attack of jaundice which had lasted 8 weeks, preceded one month before by a heavy cold. No icterus was now present. His teeth were bad.

Treatment for syphilis was resumed with bismuth, but he defaulted after the sixth injection. He reported back four months later and received bismuth and then Acetylarsan. Progress was satisfactory.

Case No. D 190. Age 50. Stable-foreman.

Admitted on 8.2.38. as a case of Sero-positive primary syphilis.

The total dosages of the pre-icteric antisyphilitic treatment were 5.55 gm. Stabilarsan and 3.6 gm. bismuth.

The jaundice developed about a week after the third injection of the second course and within 126 days of the commencement of therapy. When he reported he stated that he had already received treatment from his own doctor. Examination revealed the presence of a slight icteric tinge and a trace of bile in the urine. The icteric index was 40. Prior to the onset he had suffered from shoulder pains for about two weeks. The duration of the disease was 49 days.

The nature of the outside treatment was unknown but he was advised to continue on a low fat diet.

Bismuth therapy was restarted as soon as the icterus cleared and acetylarsan was introduced in the third post-icteric course. He also received, and tolerated, Neokharsivan in the fifth course. Further progress was satisfactory and he was discharged in 1941.

Case No. D 199. Age 32. Boot-maker.

Admitted on 9.2.38. as a case of Sero-positive primary syphilis.

Treatment prior to jaundice consisted of 4.2 gm. Stabilarsan and 2.8 gm. bismuth.

Icterus developed 22 days after the eleventh (and last) injection of the first course and within 89 days of the beginning of treatment. There were no prodromal symptoms. The urine contained bile. The course was mild and lasted 27 days.

He was given a jaundice diet sheet and received injections of sodium thiosulphate once weekly for four weeks. Arsenic and bismuth were with-held.

Bismuth therapy was resumed within seven days of the disappearance of jaundice. Stabilarsan was introduced again in the fourth post-icteric course.

Progress was satisfactory and he was discharged in 1941.

Case No. D 219. Age 31. Butcher.

Admitted on 15.2.38. as a case of Secondary Syphilis

The drugs given prior to jaundice were Stabilarsan and bismuth and the total dosages were 5.15 gm and 2.9 gm respectively.

Jaundice appeared 40 days after the eleventh (and last) injection of the first course and within 119 days of the commencement of treatment. There were no prodromal symptoms. The urine contained much bile. The duration was 22 days.

He was given a diet sheet and received injections of sodium thiosulphate and Redoxon once weekly on two occasions.

Immediately the icterus had disappeared anti-syphilitic therapy was resumed with bismuth. Shortly after, acetylarsan was introduced and he received and tolerated Neokharsivan in the fourth post-icteric course. Progress was satisfactory and he was discharged in 1942.

Case No. D 258. Age 29. Seaman.

ADMITTED on 23.2.38. as a case of Primary Syphilis.

Treatment in this patient had been commenced prior to admission and was continued in the clinic. The dosages before jaundice developed were 6.75 gm. Stabilarsan and 1.9 gm bismuth.

The jaundice appeared 42 days after the fifth injection of the second course and within 60 days of the commencement of treatment in the clinic. The jaundice was slight and the icteric index was 20. The patient was affected with scabies and boils and he had had dermatitis about two months before. The duration was 20 days.

The drugs were withdrawn, advice was given on diet, and adexolin capsules and ascorbic acid tablets were prescribed.

Bismuth therapy was resumed one day after the clearance of icterus and acetylarsan was introduced three weeks later. Further progress was satisfactory.

Case No. D.365. Age 24. Labourer.

Admitted on 15.3.38. as a case of Secondary Syphilis.

Before jaundice he received 4.45 gm. Neokharsivan and 1.5 gm bismuth.

Icterus developed 39 days after the eighth injection of the first course and within 97 days of the beginning of treatment. On examination there was icterus of the conjunctivae and bile in the urine. The icteric index was 55 and the Van den Bergh test gave a positive reaction, biphasic. The jaundice increased within a few days and the icteric index rose to 133. The duration was 25 days. He refused admission to the Ward.

Advice on diet was given and he received injections of sodium thiosulphate, Redoxon and glucose.

Antisyphilitic treatment was resumed with bismuth ten days after the disappearance of jaundice. He defaulted after this injection.

Case No. D 392. Age 20. Student.

Admitted on 19.3.38. as a case of Sero-positive primary syphilis

Treatment prior to jaundice consisted of 2.65 gm Stabilarsan and 1.2 gm. bismuth.

Icterus appeared 6 days after the fifth injection of the first course and within 30 days of the beginning of treatment. The only prodromal symptom was nausea, which also accompanied the onset of jaundice. Bile was present in the urine. The duration was 32 days.

He was advised about a low fat diet and received Redoxon (2 c.c. once daily for three days) and then ascorbic acid tablets (six daily for fifteen days).

Antisyphilitic treatment was resumed four days after the disappearance of jaundice. Neocardyl was used for the first two weeks and was followed by bisglucol for four weeks. Jaundice developed again about six weeks after the first attack. Treatment consisted of sodium thiosulphate and Redoxon. The disease ran a relatively mild but prolonged course the total duration being about three months. Bismuth therapy was resumed immediately the icterus had cleared up and acetylarsan was introduced after eight weeks. Further progress was satisfactory, but he defaulted in 1939.

Case No. D 425. Age 22. Barman.

Admitted on 25.3.38. as a case of Congenital syphilis (interstitial keratitis)

Pre-icteric antisyphilitic treatment consisted of 3.6 gm arsenic (Neokharsivan and Stabilarsan) and 2.3 gm. bismuth.

Jaundice developed 25 days after the ninth injection of the first course and within 79 days of the commencement of therapy. The icterus had been present for one week before he reported. He complained of dyspepsia. There was bile in the urine, the icteric index was 60 and the Van den Bergh reaction was biphasic. The duration was 24 days.

He was instructed about a low fat diet and received injections of sodium thiosulphate and Redoxon once weekly for three weeks.

Antisyphilitic treatment was resumed with bismuth as soon as the jaundice disappeared, and acetylarsan was introduced in the third post-icteric course. Progress was satisfactory, but he defaulted in 1939.

Case No. D.592. Age 27. Shop assistant.
Admitted on 2.5.38. as a case of Secondary syphilis.

The total dosages received before jaundice developed were 14.4 gm. arsenic (Stabilarsan and Novarsenobillon) and 8.6 gm. bismuth.

Jaundice appeared 10 days after the sixth injection of the fourth course. The time since the beginning of treatment was four years and one month; there was a long defaultment (about 32 months) from treatment between the first and second courses. The urine contained bile and the icteric index was 59. The disease began to increase in severity so that he was admitted to the ward two weeks later. Five days after admission the icteric index rose to 150, and he was very jaundiced.

No hepatic enlargement was detected. He remained in the ward for 17 days. The total duration of the attack was 39 days.

Forty-eight days after the disappearance of icterus, antisyphilitic treatment was resumed with Bisantol. Evarsen was introduced in the third post-icteric course and progress was satisfactory.

Case No. D.1081. Age 38. Cooper.

Admitted on 9.8.38. as a case of Latent syphilis.

The treatment prior to the onset of jaundice was 4.35 gm. Stabilarsan and 2.9 g.m. bismuth.

Icterus appeared 11 days after the tenth (and last) injection of the first course and within 74 days of the beginning of treatment. The jaundice had been present for three weeks before he reported for examination. The urine contained bile but no enlargement of the liver was found. About three weeks later the icteric index was 60 and the Van den Bergh reaction was biphasic. The disease ran a fairly mild but prolonged course, lasting 77 days. The laevulose-tolerance test was normal.

Bismuth therapy was instituted fourteen days before the end of the jaundice and Acetylarsan was introduced in the second post-icteric course.

Progress was satisfactory but he defaulted in 1940.

Case No. D.1304. Age 54. Postman.

Admitted on 23.9.38. as a case of tertiary syphilis. (nodular-cutaneous).

Pre-icteric treatment consisted of 6.6 gm. arsenic (Acetylarsan, Neokharsivan and Stabilarsan) and 8.0 gm. bismuth.

The jaundice developed 25 days after the first injection of the fourth course and within 347 days of the beginning of treatment. The jaundice was mild and the urine contained a little bile. There was no history of alcohol, but several teeth were carious and septic. About two weeks before the onset he had a rash on both thighs and the back. The duration was 24 days.

Diet was advised and he received injections of Redoxon, calcium gluconate (2 c.c.) thrice weekly for 4 occasions. Ascorbic acid tablets were also prescribed.

Bismuth therapy was restarted fourteen days before the end of jaundice and acetylarsan was introduced in the third post-icteric course. Progress was satisfactory, except for a generalized dermatitis in 1940. He defaulted in 1942.

Case No. D.1310. Age 51. Coal-trimmer.

Admitted on 24.9.38. as a case of Tertiary syphilis. (gumma).

Treatment before the onset of jaundice was 3.45 gm. Stabilarsan and 6.6 gm. bismuth.

The icterus appeared 34 days after the eleventh (and last) injection of the second course. Bile was present in the urine, the icteric index was 37 and the Van den Bergh reaction was biphasic. The disease ran a relatively mild course although the icteric index was 50 about three weeks after the onset. The duration was 42 days.

Treatment consisted of weekly injections of Redoxon, and ascorbic acid tablets were also given. A low fat diet was advised.

Anti-syphilitic treatment with bismuth was resumed as soon as the icterus disappeared, although the urine still contained a trace of bile at this time. Acetylarsan was introduced in the third course and progress was satisfactory.

Case No. D. 1338. Age 29. Salesman.

Admitted on 30.9.38. as a case of Sero-positive primary syphilis.

The patient had already received two courses of anti-syphilitic therapy prior to attending the clinic. Treatment was continued and the dosages before icterus developed were 11.9 gm. arsenic (Stabilarsan and Novarsenobillon) and 6.15 gm. bismuth.

Jaundice appeared 7 days after the sixth injection of the third course. There were no prodromal symptoms, but a history of alcohol was obtained. The jaundice deepened over the next two days. The liver was enlarged to about two finger breadth's below the costal margin and the spleen was just palpable at the height of inspiration. Bile was present in the urine, the icteric index was 40 and the Van den Bergh reaction was biphasic. The duration was 42 days. At the end of jaundice the icteric index was 15 and the van den Bergh test gave a direct reaction, delayed. The laevulose-tolerance test was normal.

Bismuth treatment was resumed thirtyfour days before the final disappearance of jaundice. Progress was satisfactory, but he defaulted in 1939.

Case No. D. 1402. Age 61. Collector.

Admitted on 12.10.38. as a case of Latent syphilis.

Treatment prior to jaundice consisted of 5.85 gm. arsenic (Neokharsivan and Stabilarsan) and 2.2 gm bismuth.

Icterus developed 7 days after the ninth injection of the second course and within 161 days of the beginning of therapy. He complained of "pains in the legs" and bile was present in the urine. The icteric index was 25 at the onset and rose to 30 at the end of a week. The course of the disease was mild and lasted 14 days.

Treatment consisted of a low fat diet, glucose orally and injections of sodium thiosulphate in glucose solution (twice weekly on six occasions).

Anti-syphilitic therapy was resumed with bismuth thirty days after the end of jaundice. Acetylarsan was introduced later but he developed a dermatitis and bismuth only was given. Progress was satisfactory, but information was received in May 1942 that he had died (cause not stated).

Case No. D. 1515. Age 41. Unemployed.

Admitted on 4.11.38. as a case of G.P.I.

Anti-syphilitic therapy prior to the development of jaundice was 4.4 gm. Tryparsamide and 4.4 gm. bismuth.

Icterus appeared 7 days after the third injection of the second course and within 133 days of the beginning of therapy. The urine contained bile, the icteric index was 125 and the Van den Bergh reaction was biphasic. The lower edge of the liver was about three inches below the costal margin. No evidence of ascites. Bradycardia was found. The temperature was normal. He was admitted to the ward for two weeks. Total duration of the attack was 48 days. The Van den Bergh reaction was direct biphasic on several occasions during the jaundice.

He was put on to the special diet for jaundice and received glucose orally. Sodium thiosulphate and injections of glucose solution were given.

Anti-syphilitic treatment was resumed three days before the disappearance of jaundice. The drug used was Neocardyl. Tryparsamide was introduced later and progress was satisfactory. He was transferred to another clinic in 1942.

Case No. D. 1582. Age 39. Miner.

Admitted on 17.11.38. as a case of Tertiary syphilis.

The dosages of anti-syphilitic drugs before jaundice were 4.35 gm. arsenic (Neokharsivan and Stabilarsan) and 4.1 gm. bismuth.

Icterus appeared 7 days after the third injection of the second course and within 147 days of the beginning of treatment. There had been a complaint of shoulder pains for two weeks beforehand. The urine contained bile. No hepatic enlargement. The duration was 12 days.

The only treatment given was the special low fat diet.

Bismuth was given seven days before the end of jaundice and acetylarsan and later Stabilarsan were introduced.

These were followed by Novarsenobillon.

Further progress was satisfactory.

Case No. D. 1610. Age 27. Grocer.

Admitted on 22.11.38. as a case of Secondary syphilis

Before jaundice developed he received 3.75 gm. Stabilarsan and 3.9 gm. bismuth.

The icterus developed seven days after the twelfth injection of the first course and within 141 days of the commencement of therapy. Clinically the jaundice was severe but no hepatic enlargement was found. The urine contained much bile and the icteric index was 72. Two weeks before onset he developed a dermatitis around the elbows. The state of his teeth was unsatisfactory.

The duration of the attack was 39 days.

He was advised about diet and received calciostab intravenously once daily for four days.

Bismuth treatment was restarted as soon as the jaundice cleared and progress was satisfactory until he defaulted in December, 1939.

Case No. D. 1700. Age 35. Labourer.

Admitted on 8.12.38. as a case of Tertiary Syphilis.

Treatment prior to jaundice consisted of 6.2 gm. arsenic (Acetylarsan, Stabilarsan) and 6.5 gm. bismuth.

Icterus appeared 20 days after the fourth injection of the third course and within 237 days of the commencement of therapy. There was sciatica for about three weeks prior to onset and a few months previously he had a mild chronic conjunctivitis.

The urine contained bile, and the icteric index was 100, later rising to 150. The duration was 41 days. No hepatic enlargement was found. No history of alcohol.

He was issued with a diet sheet and instructed to take magnesium sulphate as a purgative in the mornings. He also received injections of Redoxon, and ascorbic acid tablets orally.

Bismuth therapy was begun 21 days before the end of jaundice. There was a slight deepening in the icterus after the first injection, but therapy was continued. Progress was satisfactory, but he defaulted about six weeks later.

Case No. D. 1799. Age 68. Gardener.
Admitted on 3.1.39. as a case of Latent syphilis.

Pre-icteric treatment for syphilis consisted of 4.15 gm. arsenic (Acetylarsan and Stabilarsan) and 12.0 gm. bismuth.

The jaundice appeared 30 days after the tenth and last injection of the sixth course and within two years and five months of the beginning of treatment. There was icterus of the conjunctivae and he was languid and complained of anorexia. The bowels were irregular. Bile was in the urine and the icteric index was 40. There was a trace of bile in the urine two days before the jaundice appeared. He had osteo-arthritis of the knee-joints. The duration of the disease was 26 days.

He was instructed about taking a low fat diet. Just before the jaundice developed he was given 15 units of insulin and 200 c.c. glucose solution intravenously. During the stage of jaundice five "drips" (twice weekly) of 20% glucose solution were given.

Anti-syphilitic treatment was resumed with Neocardyl fourteen days after the disappearance of jaundice. Bisglucol was used in the next course.

Progress was satisfactory, but he defaulted in 1943 and notification of his death was received in 1944.

Case No. D. 1821. Age 32. Miner.

Admitted on 9.1.39. as a case of Sero-positive primary syphilis.

Therapy prior to the appearance of icterus was 2.85 gm. arsenic (Neokharsivan and Stabilarsan) and 1.9 gm. bismuth.

Jaundice developed 7 days after the sixth injection of the first course and within 39 days of the commencement of therapy. There was icterus of the conjunctivae and the icteric index was 25. Duration was 21 days. The laevulose-tolerance test was normal.

He was advised about diet. No drugs were administered. Two weeks later the Van den Bergh was biphasic.

Bismuth injections were continued throughout the stage of icterus, but arsenic was withheld. Neokharsivan was introduced a few weeks later but the icteric index rose to 26 and bismuth along was continued.

Neokharsivan was introduced later without ill effects and progress was satisfactory until his discharge in 1941.

Case No. D. 1876. Age 63. Boilerman.

Admitted on 21.1.39. as a case of early Tabes dorsalis

Treatment prior to jaundice consisted of 42 gm. Tryparsamide and 5.4 gm. bismuth.

The icterus appeared 3 days after the fourth injection of the third course and within 249 days of the beginning of treatment. Bile was present in the urine and the icteric index was 50 (later rising to 95). Prior to onset lumbar pain and stiffness were present for about two weeks. The duration was 19 days. Four days after onset Van den Bergh reaction was strong biphasic.

Diet was prescribed and injections of sodium thiosulphate in glucose, and Redoxon were given. He also received tablets of ascorbic acid.

Bismuth injections were restarted 7 days after the end of jaundice. Acetylarsan was introduced in about four to five months and was followed after a short interval by Tryparsamide.

Progress was satisfactory but he defaulted from treatment in 1942.

Case No. D. 1923. Age 25. Plumber.

Admitted on 12.39. as a case of Sero-negative Primary syphilis.

Pre-icteric therapy of the syphilitic infection consisted of 4.8 gm. Neokharsivan and 0.3 gm. bismuth.

Jaundice developed 28 days after the eleventh (last) injection of the first course and within 96 days of the beginning of treatment. Mild jaundice was present and no bile was detected in the urine for about three days. The icteric index was 60. There was slight loss of weight. The course was relatively mild but prolonged, lasting 52 days.

Anti-syphilitic treatment was resumed with Acetylarsan 14 days after the clearance of icterus. Stabilarsan was not introduced till after the fourth course. Bismuth was not given as he had albuminuria.

Progress was good but he defaulted in 1941.

Case No. D. 1942. Age 48. Seedsman.

Admitted on 8.2.39. as a case of Tabes dorsalis.

He received 183 gm. Tryparsamide, 12.3 gm. trivalent arsenic (Neokharsivan and Stabilarsan) and 24.6 gm. bismuth before jaundice developed.

Icterus appeared 7 days after the fifth injection of the tenth course and within about 4 years of the commencement of therapy. By the time he reported the jaundice had been present for six weeks and only a slight icteric tinge remained. No bile in the urine. The icteric index was 14. He had been treated by his own physician outside the clinic. The total duration was 56 days.

The only treatment he received in the clinic was an intramuscular injection of Vitamen C (500 mgm.).

Bismuth therapy was resumed immediately the icterus disappeared and Acetylarsan was introduced at the end of this first post-icteric course.

About seven months later Tryparsamide was started followed shortly by sessions of inductopyrexia.

Progress was satisfactory.

Case No. D.1965. Age 38. Taxi-driver.

Admitted on 13.2.39. as a case of Sero-negative primary syphilis

Before jaundice he received 4.5 gm. Stabilarsan and 3.0 gm. bismuth.

The jaundice appeared 13 days after the first injection of the second course and within 108 days of the beginning of treatment. He sent a letter saying that he was in bed with jaundice and was being attended by his own physician. He reported about ten days later and was still showing definite icterus. The icteric index was 50 but no bile was detected in the urine. Duration was 28 days.

He was advised to remain on a low fat diet. He was given injections of Redoxon and tablets of ascorbic acid.

Anti-syphilitic treatment was restarted immediately jaundice disappeared. Bismuth was used first. He then entered the Army and received no treatment till he reported in 1941 when Acetylarsan was given. Further progress was satisfactory but he defaulted in 1942.

Case No. D. 1976. Age 50. Labourer.

Admitted on 15.2.39. as a case of Tertiary syphilis.

When admitted he was severely jaundiced. The stools were pale and the urine contained bile. The liver was enlarged to five finger breadth's below the costal margin. The jaundice was first noticed by the patient about six weeks before admission. There had been a slight degree of dysphagia for solids for six months, for six months. A barium meal produced negative results and a fractitional test meal showed normal acidity. The total fat in the stools was 27.1 gm%.

The icteric index was 60 and the Van den Bergh Reaction was direct biphasic. His teeth were decayed. The total duration of the jaundice was 66 days approximately.

Treatment was immediately started with bismuth and Acetylarsan was introduced on the third course. Progress was satisfactory but he defaulted in 1940.

The provisional diagnosis in this case was a gumma of the liver.

Case No. D.1978. Age 49. Gas-fitter.

Admitted on 16.2.39. as a case of Secondary syphilis.

The dosages of anti-syphilitic drugs received by the patient before jaundice developed were 4.8 gm. Neokharsivan and 2.9 gm. bismuth.

Icterus developed 28 days after the eleventh (last) injection of the first course and within 103 days of the beginning of treatment. The degree of jaundice appeared severe, the urine contained much bile and the icteric index was 100. The Van den Bergh reaction was positive biphasic. The prodromal symptoms were "pains in the joints" for one to two weeks. The jaundice deepened and he was admitted to the ward two weeks later when the icteric index was 250. The liver was now four finger breadths below the costal margin. Two days later there was pain in the epigastrium and flatulence. The blood urea was 12 mgms.%. There was much bile in the urine and some hyaline casts. Five days after admission there was a slight but short-lived rise in temperature. He lost 8 lb. in weight. He was discharged after 12 days but readmitted one week later as no improvement had occurred, and he was kept in for 21 days. Total duration of jaundice was 53 days.

Treatment consisted of special diet, Mist. Jaund. Co., calciostab and Vitamen B_1.

Bismuth injections were started 7 days after the disappearance of jaundice and progress was satisfactory but he defaulted four months later. In 1943 it was learned that he had been admitted to a medical ward with hemiparesis.

Case No. D. 2077. Age 31. Baker.

Admitted on 13.3.39. as a case of Latent syphilis.

Prior to jaundice he received 1.05 gm. Stabilarsan and 0.4 gm. bismuth.

The icterus developed 66 days after the second injection of the first course and within 75 days of the beginning of treatment. The conjunctivae were tinged yellow but no bile was detected in the urine. The icteric index was 22. There was definite jaundice and bile in the urine a week later, and the icteric index rose to 62. The course was relatively mild and lasted 36 days.

Diet was advised and he was given one injection of Redoxon (2 c.c.)

Treatment with bismuth was not stopped, only the arsenical being withdrawn. Acetylarsan was given on the second course and Stabilarsan on the third.

Progress was satisfactory.

Case No. D. 2088. Age 63. Baker.

Admitted on 16.3.39. as a case of Syphilitic myocarditis

Treatment prior to onset of jaundice consisted of 1.65 gm. Stabilarsan and 5.4 gm. bismuth.

The jaundice appeared 7 days after the first injection of the second course and within 126 days of the commencement of therapy. The icterus was slight and there was bile in the urine. Three days later the icteric index was 40 and the Van den Bergh reaction was positive, biphasic. The duration was 24 days.

A low fat diet was advised and he received Redoxon (2 c.c.) twice weekly on three occasions.

Bismuth was continued during jaundice but the arsenical was withdrawn.

Acetylarsan was introduced later without ill effect and progress was satisfactory. A laevulose-tolerance test done three months after the attack of jaundice was normal.

Case No. D. 2171. Age 41. Miner.

Admitted on 4.4.39. as a case of Sero-negative primary syphilis

The dosages before jaundice developed were 11.15 gm. arsenic (Acetylarsan, Neokharsivan and Stabilarsan) and 4.3 gm. bismuth.

Jaundice appeared 10 days after the second injection of the fifth course and within four and a half years of the commencement of treatment. When he reported he stated that he had been three weeks in a medical ward with jaundice. A slight icteric tinge was still present and the icteric index was 56. He had lost 4 lb. in weight. The duration was 43 days.

Diet was advised to be continued for a short time and Vitamen C was given by injection on two occasions.

Anti-syphilitic treatment was resumed with Bisantol, and progress was satisfactory.

About four months after the first attack he again developed jaundice which followed a single injection of Mapharside given four days previously.

Treatment was given in a medical ward and duration was uncertain. No more arsenic or bismuth was given but iodides were prescribed.

Progress was satisfactory.

Case No. D. 2181. Age 24. Bricklayer.

Admitted on 7.4.39. as a case of Secondary syphilis.

Dosages prior to jaundice were 4.95 gm. Neokharsivan and 3.3 gm. bismuth.

The icterus developed 11 days after the second injection of the second course and within 109 days of the beginning of treatment. The jaundice was slight and bile was found in the urine. The duration was 21 days.

A low fat diet was advised, with a saline purge in the mornings. Glucose orally was prescribed and he also received injections of Redoxon biweekly.

Bismuth therapy was resumed as soon as the jaundice disappeared, but jaundice developed again about three months later. The icteric index was 31 and the Van den Bergh reaction was biphasic. The stools were pale. The liver was found to be two finger breadths below the costal margin.

The attack lasted 10 days. A low fat diet and Vitamen C was prescribed. Bismuth injections were started immediately the icterus cleared up and Acetylarsan was introduced four months later. Stabilarsan was brought in four months after this.

Progress was good but he defaulted in 1942.

Case No. D. 2286. Age 43. Commercial Traveller.

Admitted on 1.5.39. as a case of Secondary syphilis.

Before jaundice developed he had received 2.55 gm. Stabilarsan and 2.8 gm. bismuth.

The icterus appeared 18 days after the eleventh (last) injection of the first course and within 79 days of the commencement of therapy. The urine contained bile and the icteric index was 40. He lost about half a stone in weight. The disease was fairly mild, but prolonged to 42 days.

One week before anti-syphilitic treatment was resumed the van den Bergh reaction was delayed.

He was put on a low fat diet. Injections of calciostab and tablets of ascorbic acid were given.

Bismuth injections were started as soon as the icterus had disappeared. Beyond a slight dermatitis of the legs three months later, progress was satisfactory, but he defaulted in March, 1940.

Case No. D. 2325. Age 59. Retired.

Admitted on 9.5.39. as a case of Tabes dorsalis.

Dosages of anti-syphilitic drugs before jaundice were 15 gm. Tryparsamide and 2.6 gm. bismuth.

Icterus appeared 9 days after the fifteenth (last) injection of the first course and within 94 days of commencement of therapy. There was deep jaundice and general asthenia. The tongue was dry and furred. The liver was enlarged to three finger breadths below the costal margin but was not tender. There was no ascites. Pruritus was present. There was much bile and a trace of albumin in the urine. The icteric index was 150 (later 175) and the Van den Bergh reaction was positive, biphasic. He had a cystitis during the first course. He was admitted to the ward for 19 days and the duration of jaundice was 48 days.

The special jaundice diet was given along with saline purges, glucose drinks and Mist. Jaund. Co. Injections of Redoxon were also administered.

Bismuth treatment was resumed within two days of the disappearance of icterus. Novarsenobillon was introduced in the third course, but as it caused a dermatitis, Acetylarsan was substituted. Progress was satisfactory but he developed a cerebral haemorrhage in December, 1943.

Case No. D. 2361. Age 42. Unemployed.

Admitted on 18.5.39. as a case of Tabes dorsalis.

Prior to admission he had received three courses of anti-syphilitic treatment. Therapy was continued in the clinic and the total dosages before jaundice were 43 gm. arsenic (Tryparsamide and Acetylarsan) and 10 gm. bismuth. He also received nine sessions of inductopyrexia.

Icterus developed one day after the twentysecond injection of the fourth course and within one year and four months of the beginning of treatment. The icterus was mild, the urine contained a trace of bile and the icteric index was 22. He had a boil on the left thigh one day before the onset. In-patient therapy lasted 11 days and the total duration of the attack was 42 days. He lost 5 lb. in weight.

While he was an in-patient two sessions of inductopyrexia were given without ill effect. Bismuth was resumed 7 days after the end of the jaundice and Acetylarsan was introduced one month later. He later received, and tolerated, Stabilarsan and Tryparsamide and progress was satisfactory.

Case No. D.2428. Age 64. Engineer.

Admitted on 3.6.39. as a case of Tabes dorsalis.

Treatment prior to jaundice consisted of 20 gm. Tryparsamide and 1.8 gm. bismuth.

Icterus appeared about two months after the fourth injection of the second course and within 254 days of the beginning of treatment. There was slight malaise for three days before the onset. The icterus was fairly mild. The urine contained a trace of bile and the icteric index was 21. The duration was 7 days.

He was advised about diet and received two injections of sodium thiosulphate.

Treatment with bismuth was started again as soon as the jaundice had disappeared.

Progress was satisfactory but cardiac failure developed early in 1940.

Case No. D.2456. Age 34. Unemployed.

Admitted on 7:6:39 as a case of Tabes dorsalis.

Treatment before jaundice consisted of 0.3 gm Stabilarsan, 23 gm. Tryparsamide and 2.6 gm. bismuth.

The jaundice appeared 31 days after the fifteenth (last) injection of the first course and within 112 days of the beginning of treatment.

Clinically, he was deeply jaundiced and bile was present in the urine. The disease ran a prolonged course, lasting 71 days. The icteric index was 66 one month after the onset, but had dropped to 11 three weeks later.

He was instructed about a low fat dietary regime. Injections of calciostab and Redoxon were given, and ascorbic acid tablets were prescribed.

Bismuth was resumed 41 days before the disappearance of icterus and Tryparsamide was introduced in the next course.

Progress was satisfactory.

Case No. D 2573. Age 43. Commercial Traveller.

Admitted on 6:7:39 as a case of Sero-negative primary syphilis.

Total dosages of drugs received prior to jaundice were 5.4 gm. Stabilarsan and 2.8 gm. bismuth.

Icterus developed early in the second course (which was given outside the clinic) and within 108 days of commencement of therapy. The urine contained bile. About two weeks after onset he had an attack of abdominal pain and the stools were pale. A provisional diagnosis of cholecystitis rather than arsenotherapy jaundice was made. Radiological examination of the gall-bladder gave negative results.

A low fat diet and tablets of ascorbic acid were prescribed.

Anti-syphilitic treatment was resumed with bismuth as soon as the jaundice cleared away and Acetylarsan was introduced about half way through this first post-icteric course.

He made good progress but defaulted in 1940.

Case No. D.2594. Age 39. Labourer.

Admitted on 10.7.39. as a case of Sero-positive primary syphilis.

The pre-icteric dosages of anti-syphilitic drugs were 3.9 gm. Stabilarsan and 2.6 gm. bismuth.

Jaundice developed 7 days after the second injection of the second course and within 119 days of the beginning of treatment. The urine contained bile and there was also a trace of albumin. The icteric index was 75.

He was admitted to a medical ward for treatment and the duration of the jaundice was 32 days. He had a severe dermatitis of the face at the end of the first course.

Bismuth injections were restarted as soon as the icterus had disappeared, but no more arsenic was given. In 1942 he developed a slight jaundice after the ninth course of treatment. The icteric index was 50 and he was admitted to the ward for 3 days. The duration of jaundice was 9 days. He had coryza and there was also a history of alcohol.

Anti-syphilitic treatment was not resumed and progress was uneventful.

Case No. D 2727. Age 22. Clerk.

Admitted on 4.8.39. as a case of Sero-positive primary syphilis

Before jaundice developed he received 5.55 gm. Neokharsivan and 3.0 gm. bismuth.

Jaundice appeared 28 days after the fifteenth (last) injection of the first course and within 112 days of the beginning of treatment. On examination there was definite jaundice of the conjunctivae and skin, the urine contained bile and the icteric index was 60. The disease was relatively mild and lasted 21 days. Nausea, vomiting and a "severe cold" preceded the onset.

Bismuth therapy was resumed as soon as the icterus cleared up. Acetylarsan was introduced in the next course and he tolerated Stabilarsan in the following course.

He progressed well, but defaulted in 1941.

Case No. D. 2849: Age 72. Labourer.

Admitted on 30|8:39: as a case of Latent syphilis.

Prior to jaundice he received 0.75 gm Stabilarsan, 13.75 gm. pentavalent arsenic (Tryparsamide and Acetylarsan) and 2.0 gm. bismuth. The first few injections were given before he came to the clinic.

Jaundice developed 78 days after the fifth injection of the fourth course and within 2 years and 2 months of the beginning of treatment. The icteric index was 62 and he was admitted to the ward for 6 days. The disease ran a mild but prolonged course, the duration being 93 days.

He was put on the special dietary regime for jaundice. Glucose (orally and by injection) Mist. Jaund. Co., and Vitamen C. (orally and by injection) were prescribed.

Anti-syphilitic treatment was resumed with Neocardyl. Only one injection was given and information was later received that he was suffering from mental deterioration.

Case No. D. 2868. Age 61. Dealer.

Admitted on 5.9.39. as a case of Tertiary syphilis (leukoplakia).

Total treatment received before jaundice was 2.9 gm. Stabilarsan (I.M.), 9 c.c. Acetylarsan and 7.8 bismuth.

Jaundice appeared 21 days after the tenth (last) injection of the fifth course and within fifteen months of the beginning of treatment. At first the urine contained a little bile, but this quantity increased considerably during the week following onset. After two weeks the icteric index was 66. One month before the onset he had coryza and one week later complained of irritation of the skin of the chest. He was admitted to the ward for 7 days three weeks after the appearance of jaundice. The duration of the disease was 78 days.

The special jaundice diet was given. He received seven intravenous "drips" of 20% glucose solution (three of 2,000 c.c. and four of 400 c.c.) and also 20 c.c. injections of glucose solution, and Vitamen C.

Neocardyl injections were started 25 days before the end of jaundice and caused a slight but short-lived exacerbation after the third injection. Bismuth therapy was resumed after a short interval and colloidal mercury was introduced later. About four months after the first attack he had a further mild attack of jaundice which lasted 11 days. Sodium thiosulphate and Vitamen C injections were given. In June 1944 Acetylarsan was introduced without ill effect.

Case No. D. 2897. Age 29. Labourer.

Admitted on 11.9.39. as a case of Sero-negative primary syphilis

Treatment prior to jaundice consisted of 5.55 gm. stabilarsan and 2.8 gm. bismuth.

Icterus developed 28 days after the thirteenth (last) injection of the first course and within 102 days of the beginning of treatment. At first icterus of the conjunctivae only was present. One week later the icteric index was 33 and the urine contained bile. Three weeks before onset of jaundice he complained of pains in both shoulders, which were referred down the arms. Duration was 35 days.

Diet and saline purgatives were advised. No drugs were given.

Bismuth therapy commenced again two weeks before the disappearance of jaundice and Acetylarsan was introduced about six months afterwards. Within two months of this he received and tolerated Neokharsivan.

He progressed satisfactorily and was discharged in 1943.

Case No. D.2914. Age 25. Clerk.

Admitted on 15.9.39. as a case of Sero-positive primary syphilis.

Before jaundice appeared he received 4.8 gm. Stabilarsan and 3.2 gm. bismuth.

Icterus developed 28 days after the thirteenth (last) injection of the first course. He was fairly deeply jaundiced but no enlargement of the liver was found. The urine contained bile. Duration was 21 days.

A low fat diet and ascorbic acid tablets were prescribed.

Anti-syphilitic therapy was resumed with bismuth 7 days before the disappearance of icterus and Neoksharsivan was introduced three weeks later. He progressed favourably but defaulted in 1941.

Case No. D. 3031. Age 32. Police-constable.

Admitted on 12.10.39. as a case of Sero-negative primary syphilis.

Dosages of anti-syphilitic drugs given prior to jaundice were 6.7 gm. Neokharsivan and 3.1 gm. bismuth.

Jaundice appeared one week after the first injection of the second course and within four months of the beginning of treatment.

On reporting he stated that he had been in bed with jaundice. Icterus was still present and bile was detected in the urine. The icteric index was 24. Three days later the icteric index was 50 and the Van den Bergh reaction was delayed. The laevulose-tolerance test was normal . The duration was 24 days. He gave a history of "several attacks of jaundice since 1924 but all X-rays negative".

A low fat diet was prescribed. No drugs were given.

Anti-syphilitic treatment was resumed with bismuth eight days before the disappearance of icterus. Acetylarsan was introduced six months later and followed by Neokharsivan on the next course.

Progress was satisfactory and he was discharged in 1942.

Case No. D. 3081. Age 26. Unemployed.

Admitted on 28.10.39. as a case of Sero-negative primary syphilis

Treatment prior to onset of jaundice consisted of 8.1 gm. Neokharsivan and 4.1 gm. bismuth.

Jaundice appeared 4 days after the sixth injection of the second course and within 164 days of the beginning of treatment. During the preceeding three weeks he complained of shoulder pains and stiffness in the upper limb muscles. There was a history of alcohol. On examination, he had icterus of the skin and conjunctivae, and bile in the urine. The icteric index was 46 and the Van den Bergh reaction was strongly biphasic. He was admitted to the ward for the duration of the jaundice which was 73 days. The highest icteric index recorded was 150 and three Van den Bergh tests performed fortnightly gave strong biphasic, prompt biphasic and direct, delayed biphasic reactions, in that order. There was a slight exacerbation about a month before the end of jaundice due to too rapid return to normal diet.

Treatment consisted of the special jaundice diet, Vitamen C (orally and by injection), adexolin, fersolate and 20 c.c. injections of glucose solution.

Bismuth therapy was resumed 10 days after the clearance of icterus. Progress was satisfactory. He was transferred to another clinic after the second injection of this course.

Case No. D.3091. Age 25. Cleaner.

Admitted on 30.10.39. as a case of Secondary syphilis.

Anti-syphilitic treatment prior to the development of icterus consisted of 3.0 gm. Stabilarsan and 1.2 gm. bismuth.

Jaundice, accompanied by nausea, appeared 4 days after the eighth injection of the first course and within 28 days of the beginning of treatment. The urine contained a little bile.

The duration was 7 days.

Bismuth therapy was continued throughout and was reinforced with Acetylarsan as soon as the icterus disappeared. Stabilarsan was introduced three months later. The Van den Bergh reaction was first direct, and one month later delayed.

Progress was satisfactory until he defaulted from treatment in December, 1940.

Case No. D. 3219. Age 53. Binocular maker.

Admitted on 5.12.39. as a case of Sero-positive primary syphilis

The dosages of anti-syphilitic drugs given prior to jaundice were 6.3 gm. Stabilarsan and 3.0 gm. bismuth.

Jaundice developed 18 days after the tenth (last) injection of the first course and within 100 days of commencement of therapy. Onset was preceeded by anorexia, and nausea for twelve days. On examination, there was an icteric tinge in the conjunctivae and also a few spontaneous petechial haemorrhages at both wrists. Bile was detected in the urine and the icteric index was 20 (later 25). The Van den Bergh test gave a direct reaction, positive. He lost one stone in weight. The duration was 33 days. Shoulder, knee and wrist joint pains were present during jaundice and a purpuric rash occurred on both arms.

A low fat diet was prescribed. No drugs beyond nicotinic acid (5 mgms. twice daily for a week).

As soon as icterus disappeared treatment with bismuth was recommenced. Acetylarsan was introduced about seven months later followed by Novarsenobillon on the next course.

Progress was satisfactory.

Case No. D. 3368. Age 43. Railwayman.

Admitted on 23.1.40. as a case of Sero-positive primary syphilis.

Before jaundice developed he received 4.35 gm. Stabilarsan and 2.2 gm. bismuth.

Icterus appeared 7 days after the tenth injection of the first course and within 62 days of the commencement of therapy. During the three weeks prior to onset he complained of irritation of the skin of the back. The onset of jaundice was accompanied by gastro-intestinal upset and dermatitis of both legs. Bile was found in the urine and the icteric index was 16. The duration of jaundice was 11 days. During jaundice the Van den Bergh test gave an indirect reaction, slightly positive.

A low fat diet and Vitamen C (orally and by injection) were prescribed. The dermatitis was treated by immediate withdrawals of blood by venepuncture and calamine lotion.

Anti-syphilitic treatment was resumed 24 days after the end of the attack and bismuth was the drug used. Acetylarsan was introduced about six months later.

Progress was satisfactory.

Case No. D.3370. Age 28. Labourer.

Admitted on 23.1.40. as a case of Sero-positive primary syphilis

Before jaundice he received 4.95 gm. Stabilarsan and 2.9 gm. bismuth.

The icterus developed 3 days after the first injection of the second course and within 97 days of the beginning of treatment.

Prior to onset there was anorexia and nausea for two days. On examination there was jaundice of the conjunctivae and skin and a trace of bile in the urine. The icteric index was 33 and the Van den Bergh reaction was direct, delayed biphasic. The duration was 10 days.

A low fat diet was advised. No drugs were given.

Bismuth therapy was resumed 8 days after the disappearance of icterus and Stabilarsan was introduced about six weeks later. He progressed satisfactorily, but defaulted in 1941.

Case No. D. 3449. Age 28. Barman

Admitted on 13.2.40. as a case of Sero-negative primary syphilis

Treatment before jaundice consisted of 7.35 gm. Stabilarsan and 4.2 gm bismuth.

Icterus appeared about three weeks after the fourth injection of the second course and within 122 days of the beginning of treatment. There was bile in the urine, the icteric index was 40 and the Van den Bergh reaction was direct, delayed biphasic. There was stiffness of the shoulders, nausea and vomiting (two occasions) during the three weeks prior to onset. Duration was 7 days.

He was advised about diet and received injections of sodium thiosulphate.

Bismuth treatment was resumed seven days after the disappearance of icterus. He was given an injection of Stabilarsan along with the second injection of bismuth but arsenical therapy was withheld until four months later. During the first post-icteric course the Van den Bergh reaction was indirect, delayed.

Progress was satisfactory, but he defaulted in December, 1940.

Case No. D.3500. Age 33. Labourer.

Admitted on 29.2.40. as a case of Sero-negative primary syphilis.

Treatment prior to jaundice consisted of 4.35 gm. Neokharsivan and 2.8 gm. bismuth.

The jaundice appeared 21 days after the eleventh (last) injection of the first course and within 91 days of the commencement of therapy. Two weeks before the onset he developed erythema multiforme on the hands and feet. On examination the liver was two finger breadth's below the costal margin and bile was present in the urine. The icteric index was 80 (later 106). One week later the jaundice had deepened and he complained of pains in the arms and legs and was admitted to the ward for 42 days. The duration of the disease was 53 days.

He received the special diet for jaundice, Vitamen C (parenterally) and acetylsalicylic acid for the rheumatic pains.

On leaving the ward he defaulted for about eleven months. Bismuth therapy was instituted and progress was satisfactory until he was transferred to another clinic later.

Case No. D 3521. Age 35. Aluminium-worker.
Admitted on 7.3.40. as a case of Secondary syphilis.

Prior to jaundice he received 2.1 gm Stabilarsan and 1.8 gm. bismuth.

Icterus appeared 7 days after the eleventh (last) injection of the first course and within 52 days of beginning of treatment. During the previous week there were occasional complaints of flatulence, heart-burn and joint pains. On examination, the liver was three finger breadths below the costal margin but was not tender. The icteric index was 25 (later 44) and the Van den Bergh reaction was direct, biphasic.

He was admitted to the ward for 27 days and the total duration was 45 days. Eight days after the onset the specific agglutination test for Weil's disease was negative. The van den Bergh test was performed once more during the stage of icterus and gave a direct reaction, delayed.

He received the special jaundice diet and sixteen 20 cc. injections of 20% glucose solution intravenously.

Antisyphilitic treatment was resumed with Neocardyl 30 days before the end of jaundice and Bisglucol was substituted for it on the third injection. Stabilarsan was introduced about five months later. Progress was satisfactory and he was later transferred to another clinic.

Case No. D 3528. Age 52. Unemployed.

Admitted on 9.3.40. as a case of Tertiary syphilis. (gumma)

Prior to jaundice he received 2.25 gm. Stabilarsan and 1.7 gm. bismuth.

Icterus appeared 28 days after the fourteenth (last) injection of the first course and within 136 days of the beginning of treatment. When he reported he stated that the jaundice had been present for two weeks. He was still jaundiced. The urine contained bile and the icteric index was 66 (later 102). The Van den Bergh reaction was direct, delayed biphasic. There had been stiffness of the shoulder joints during the six weeks before onset of icterus. He was treated as an out-patient but was admitted to the Ward two weeks later and remained there for 38 days. The day after admission the Van den Bergh reaction was direct, prompt biphasic. Total duration was 49 days.

He received a special diet, saline purgatives and glucose "drips" intravenously (1,600 cc. twice, 2,000 cc. three times) once daily.

Ten days after the end of jaundice bismuth injections were restarted and Acetylarsan was introduced about four months later. Progress was satisfactory.

Case No. D.3651. Age 39. Miner.

Admitted on 8.4.40. as a case of Latent syphilis.

Treatment before the appearance of jaundice was 9.0 gm Stabilarsan and 5.9 gm. bismuth.

Icterus developed 35 days after the tenth (last injection of the second course and within 218 days of the commencement of therapy. The jaundice was mild but deepened during the next four weeks. At the onset there was bile in the urine and the icteric index was 40 (later 80). The stools were pale, but the bowels were regular. He felt nauseated and weak. No hepatic enlargement was detected. The disease lasted 105 days.

Treatment consisted of a low fat diet, vitamen C by injection and seven "drips" of 20% glucose solution (400 c.c.) given every two days.

Antisyphilitic treatment was resumed with Neocardyl, followed in four months by Acetylarsan. Stabilarsan was introduced a few weeks later. There was a mild attack of jaundice six months after the first appearance of jaundice. The icteric index was 33 but no bile appeared in the urine. The duration was 21 days. Treatment with sodium thiosulphate and Vitamen C was given. Further progress was uneventful.

Case No. D. 3709. Age 46. Civil Servant.

Admitted on 22.4.40. as a case of Tabes dorsalis.

Before jaundice developed he received 20 gm. Tryparsamide and 2.2 gm. bismuth.

The jaundice appeared 35 days after the twelfth (last) injection of the first course and within 114 days of the commencement of therapy. At first he refused admission to the ward but agreed to do so about six weeks later. The icteric index was 33.

He had several septic teeth.

He was in the ward over 14 days and the total duration was 127 days. He was put on the special diet for jaundice and received 2,000 c.c. of 20% glucose solution once daily for three days.

Bismuth treatment restarted 65 days before the end of the attack. Following the fourth injection there was a slight exacerbation and treatment was stopped for 3 weeks. Acetylarsan was introduced about four months after the end of jaundice. A year and a half after the first attack of icterus jaundice again developed (Neokharsivan was used in the previous course) and lasted 30 days.

The prodromal symptoms, nausea and vomiting, lasted three days. The icteric index at the onset was 43 and bile was found in the urine. Neocardyl was given fourteen days after the disappearance of jaundice. Progress was satisfactory and he later received, and tolerated, Neohalarsine and Mapharside in full dosage.

Case No. D. 3717. Age 33. Labourer.

Admitted on 23.4.40. as a case of Sero-positive primary syphilis.

Dosages of the antisyphilitic drugs administered prior to icterus were 4.65 gm. Stabilarsan and 3.0 gm bismuth.

Jaundice appeared 35 days after the eleventh (last) injection of the first course and within 101 days of the beginning of treatment. The jaundice had been present for two days when he reported. Bile was found in the urine and the icteric index was 40.

A low fat diet was prescribed and, except for the withdrawal of the drugs, was the only therapy given.

Bismuth injection started again 35 days before the end of jaundice. Acetylarsan was given about three months later. Four months after this Stabilarsan was introduced. Progress was satisfactory and he was discharged in 1942.

Case No. D 3720. Age 27. Stoker.

Admitted on 24.4.40. as a case of Sero-negative primary syphilis.

Treatment had been started prior to admission. It was continued and the total dosages prior to jaundice were 5.25 gm. arsenic (Stabilarsan, Sulphostab) and 3.6 gm. bismuth.

Jaundice appeared 28 days after the tenth (last) injection of the second course and within 105 days of the commencement of therapy. The prodromal features were shoulder pains for two weeks and "dark urine" for three days. On examination a mild degree of jaundice was present, the urine contained bile and the icteric index was 38 (later 66). He lost 7 lb. in weight. The duration was 49 days.

He was advised about a low fat diet and arsenic and bismuth were withheld.

Antisyphilitic therapy was resumed with bismuth 14 days prior to the disappearance of jaundice and Novarsenobillon was introduced three months later.

He progressed satisfactorily, but defaulted in 1941.

Case No. D 3728. Age 27. Joiner.

Admitted on 26.4.40. as a case of Secondary syphilis.

The pre-icteric dosages of antisyphilitic drugs were 7.05 gm. Stabilarsan and 4.2 gm. bismuth.

Jaundice, accompanied by shoulder pains, appeared 5 days after the seventh injection of the second course and within 163 days of the beginning of treatment. The urine contained bile. Three weeks later the icteric index was 14. Prior to the onset he complained of shoulder pains for one week.

Treatment consisted of a low fat diet and ascorbic acid tablets.

Bismuth therapy was never stopped during jaundice, arsenic only being withheld. Novarsenobillon was introduced two courses later. Progress was satisfactory.

Case No. D.3731. Age. 52. Engineer.

Admitted on 26.4.40. as a case of G.P.I.

Prior to jaundice he received 33 gm. Tryparsamide and 3.3 gm. bismuth together with five sessions of inductopyrexia.

Icterus appeared 13 days after the thirtythird injection (last) of the first course and within 117 days of the commencement of therapy. The liver was two finger breadths below the costal margin. The icteric index was 20.

He admitted he was a heavy drinker. He was admitted to the ward and received treatment with a low fat diet, glucose (orally; and two intravenous infusions of 2000 cc.), and vitamens C and B. Six weeks later he improved and received three injections of bismuth. This was discontinued as the icteric index rose to 30. He again improved but about two months after the onset oedema of the ankles and ascites developed. He vomited brownish material. No crystals of leucin or tyrosin were found in the urine. The ascites began to diminish but cirrhosis of the liver was diagnosed. He was transferred to another ward and died 169 days after the onset of jaundice. Throughout the course of the disease the icteric index never rose above 40 and generally fluctuated between 25 and 30.

Case No. D. 3748. Age 55. Baker.

Admitted on 2.5.40. as a case of Tabes dorsalis.

Prior to jaundice he received 8.55 gm. arsenic (Acetylarsan, Tryparsamide) and 5.5 gm. bismuth.

Icterus appeared 2 days after the tenth injection of the third course and within 2 years and one month of the commencement of therapy (there was a default period of five months between the first and second courses).

The jaundice was mild, no bile was detected in the urine and the icteric index was 23 (later 43). He was admitted to the ward for 5 days - the duration of the disease.

Antisyphilitic treatment was not resumed for 59 days after the disappearance of jaundice. Bisantol was used. Progress was satisfactory, but he defaulted four months later.

Case No. D.3813. Age 22. Paper-worker.

Admitted on 17.5.40. as a case of Congenital syphilis (interstitial keratitis)

Prior to icterus he received 15.8 gm. arsenic (Stabilarsan, Acetylarsan), 4.6 gm. bismuth and 42 cc. colloidal mercury.

The jaundice appeared 19 days after the seventh injection of the seventh course and within two years and three months of the beginning of treatment. At first the jaundice was mild and the urine contained a trace of bile. A week later the icteric index was 83 and he had a sore throat (streptococcal). He was admitted to the ward for 2 days. The total duration of the disease was 14 days.

Treatment consisted of special diet, Mist. Jaund. Co., saline purgatives and vitamen B, (30 mgms. intramuscularly once weekly).

Two days after the clearance of icterus anti-syphilitic treatment was started with small doses of Neocardyl. Tryparsamide was introduced three months afterwards and further progress was satisfactory.

Case No. D. 3855. Age 53. Barman.

Admitted on 28.5.40. a case of Tabes dorsalis, (and leukoplakia)

Before jaundice he received 1.5 gm Stabilarsan and 1.1 gm. bismuth.

Icterus appeared 49 days after the eighth injection of the first course and within 95 days of the commencement of therapy. He stated on reporting that the jaundice had been present for three weeks. Icterus was still present, the urine contained bile and the icteric index was 80. Four days later he was admitted to the ward for a period of 14 days, during which time the Van den Bergh test gave a direct reaction, biphasic. The approximate duration of the disease was 35 days.

He was put on to the special jaundice diet. Glucose was given orally, also two glucose "drips" (2,000 c.c. each), sodium thiosulphate, ascorbic acid and adexolin.

On discharge from the ward he defaulted from treatment for about seven months. On returning to the clinic there was found a marked deterioration in the condition of his tongue lesion and his general condition. He was admitted to a Municipal Hospital where he died seven months later.

Case No. D.3894. Age 30. Salesman.

Admitted on 7.6.40. as a case of Sero-positive primary syphilis.

Before the appearance of jaundice he received 6.9 gm. arsenic (Stabilarsan and Novarsenobillon) and 3.5 gm. bismuth.

The jaundice developed 3 days after the third injection of the second course and within 112 days of the beginning of treatment. The jaundice was accompanied by a raised temperature (101·4°F) and lobar pneumonia was diagnosed two days later. The urine contained a trace of bile. He was admitted to the ward but was transferred to another ward three days after the diagnosis of pneumonia. Treatment of the pneumonia with sulphonamides was commenced prior to the transfer.

For the jaundice he received a special diet, Mist. Jaund. Co., and 2,000 c.c. 20% glucose solution intravenously.

When he reported back about six weeks later there was a trace of icterus still present but it disappeared in a few weeks. The total duration was 97 days.

Antisyphilitic treatment was resumed with bismuth as soon as the icterus cleared away. Progress was satisfactory and he was transferred to another clinic seven weeks later.

Case No. D. 3958. Age 28. Unemployed.
Admitted on 25.6.40. as a case of Secondary Syphilis.

Prior to jaundice he received 4.95 gm. Novarsenobillon and 3.1 gm. bismuth.

The jaundice developed 17 days after the eleventh (last) injection of the first course and within 84 days of the commencement of therapy. The jaundice had been present for one week by the time he reported for examination. The urine contained bile, the icteric index was 80 and the van den Bergh reaction was direct, intermediate. The laevulose-tolerance test was within normal limits. The duration was 56 days.

Treatment was ambulant and he was instructed about a low fat diet. Ascorbic acid was administered intravenously.

Bismuth therapy was commenced again 45 days before the final disappearance of jaundice and Acetylarsan was introduced four months later. This was followed by Stabilarsan withintwo months. Progress was satisfactory but he defaulted in 1943.

Case No. D 3987. Age 29. Butcher.

Admitted on 2.7.40. as a case of Secondary Syphilis.

Antisyphilitic treatment prior to jaundice comprised 4.8 gm. Novarsenobillon and 2.9 gm. bismuth.

Icterus developed 42 days after the eleventh (last) injection of the first course and within 106 days of the commencement of therapy. The jaundice was mild, the urine contained a trace of bile and the icteric index was 20 (later 30). There was a history of alcohol. There was no hepatic enlargement. The duration was 28 days. He was put on a low fat diet and twentyone days before the disappearance of icterus bismuth therapy was restarted. Acetylarsan was introduced five months later and this was followed by Novarsenobillon within three months. Approximately nine months after the first attack he reported with jaundice again. There was no bile in the urine but the icteric index was 38. Diet and Vitamen C. were prescribed. The duration of this second attack was 19 days. Bismuth treatment was resumed 14 days after the disappearance of icterus and Acetylarsan was given one month later. Progress was satisfactory.

Case No. D. 4019. Age 41. Orderly.

Admitted on 9.7.40. as a case of Sero-negative primary syphilis.

The total dosages of antisyphilitic drugs received before jaundice were 5.25 gm. Stabilarsan and 2.7 gm. bismuth.

The jaundice developed 7 days after the tenth injection of the first course and within 66 days of the beginning of treatment. At the onset there was no bile present in the urine. The icteric index was 22 (later 28). He was admitted to the ward for 8 days. The total duration of the jaundice was 33 days. The Van den Bergh reaction was direct, delayed. The laevulose-tolerance test was normal.

Diet was prescribed and two intravenous "drips" of 20% glucose solution were given (each 2000 c.c.) .

Bismuth treatment started 21 days prior to disappearance of icterus. Acetylarsan was introduced in four months time.

Further progress was satisfactory but he defaulted in 1941.

Case No. D.4034. Age 52. Unemployed.

Admitted on 13.7.40. as a case of Sero-negative primary syphilis.

Prior to jaundice he received 4.95 gm. Stabilarsan and 2.6 gm. bismuth.

The jaundice appeared 17 days after the ninth injection of the first course and within 71 days of the beginning of treatment. The urine contained bile, and the icteric index was 5 one week later (eventually reaching 83). He had complained of "rheumatic pains" for two weeks prior to the onset. He lost about a stone in weight. The duration was 47 days. The specific agglutination test for Weil's disease was negative.

He was instructed about diet and received 2,000 c.c. 20% glucose solution intravenously along with eight 20 - 40 c.c. injections of the same solution.

Twelve days after the end of jaundice bismuth treatment was resumed. No arsenic was given again on account of occasional complaints of heartburn, epigastric fullness and anorexia. He defaulted from treatment in 1942.

Case No. D.4102. Age 50. Labourer.

Admitted on 31.7.40. as a case of Secondary syphilis.

Antisyphilitic therapy prior to jaundice was comprised of 0.6 gm. Novarsenobillon and 0.2 gm bismuth. (he defaulted after this and reported back with jaundice).

The icterus appeared 85 days after the second injection of the first course and within 88 days of the beginning of treatment. There was severe pyorrhoea of the lower incisors and a history of alcohol was obtained. He stated the jaundice had been present for three months and treatment for it was received in a medical ward. There was still an icteric tinge present and the icteric index was 80. No liver enlargement was detected. Total duration was 71 days.

He received instructions about diet. Two intravenous "drips" of glucose solution (2,000 c.c. and 2,400 c.c.) were given along with Vitamen C.

Bismuth therapy was resumed one week before the icterus disappeared. Acetylarsan was introduced two months later. Further progress was satisfactory, but he defaulted in 1944.

Case No. D.4116. Age 54. Railway Clerk.

Admitted on 6.8.40. as a case of Tabo-paresis.

Antisyphilitic treatment before jaundice was 31 gm. Tryparsamide, 2.8 gm. bismuth and nine sessions of inductopyrexia.

Jaundice developed 7 days after the twenty-ninth injection of the first course and within 94 days of the commencement of therapy. The icterus was mild, the urine contained bile the icteric index was 20. The duration was 39 days.

He was advised about diet and received eleven injections of sodium thiosulphate in 20 cc. glucose solution.

Bismuth treatment was resumed one week after the disappearance of jaundice and Stabilarsan was introduced a few weeks later. He was given Tryparsamide again in six months time and progressed satisfactorily.

Case No. D. 4118. Age 49. Miner.

Admitted on 6.8.40. as a case of G.P.I.

Before jaundice he received 29 gm. Tryparsamide, 3.0 gm. bismuth and nine sessions of inductopyrexia.

Jaundice appeared 8 days after the twentieth injection of the first course and within 95 days of the beginning of treatment.

The jaundice was mild, the urine contained a trace of bile and the icteric index was 20 (later 50). The disease ran a relatively mild but prolonged course, lasting 128 days.

He was advised about diet. Injections of sodium thiosulphate in glucose solution and six intravenous infusions (400 c.c.) of 20% glucose solution were given.

He received his tenth session of inductopyrexia during jaundice and bismuth therapy was resumed 49 days before the final clearance of icterus. Acetylarsan was introduced two months after the end of the attack and Novarsenobillon was brought in three months after this. Tryparsamide was not used again until 1943. He progressed satisfactorily.

Case No. D. 4119. Age 44. Cleaner.

Admitted on 6.8.40. as a case of Tabo-paresis.

Before jaundice he received 43 gm. Tryparsamide and 2.6 gms. bismuth along with eight sessions of inductopyrexia.

Icterus appeared 7 days after the seventeenth injection of the first course and within 95 days of the beginning of treatment. The onset was associated with a rash on the arms and legs. The urine contained bile. He was admitted to the ward for 38 days and the total duration was 60 days. The highest icteric index recorded was 125.

He received a special jaundice diet and eight intravenous infusions of 20% glucose solution (five of 2,000 c.c.; three of 2,400 c.c.).

Antisyphilitic treatment was resumed with Neocardyl 7 days before the jaundice finally cleared. Novarsenobillon was introduced four months later. Two months afterwards he was put on Tryparsamide. He progressed satisfactorily, but defaulted in 1943.

Case No. D. 4157. Age 24. A.B. Royal Navy.

Admitted on 14.8.40. as a case of Sero-positive primary syphilis.

He had started antisyphilitic treatment prior to coming to the clinic. Therapy was continued and the total dosages were 9.0 gm. Novarsenobillon and 3.8 gm. bismuth.

Jaundice appeared 17 days after the ninth injection of the second course and within 172 days of the beginning of treatment. The icterus was mild and the urine contained bile. A week later the icteric index was 25. For approximately six weeks before the onset of jaundice there were several complaints of pains in the joints and in the soles of the feet. Duration was 27 days.

He was advised about a suitable dietary regime and received calcium laevulonate and Vitamen C by injection.

Bismuth treatment was never stopped and Acetylarsan was introduced two months after the disappearance of the jaundice. Three months after this he was put on to Novarsenobillon. Progress was satisfactory but he defaulted from treatment in 1942.

Case No. D. 4219. Age 19. Miner.

Admitted on 28.8.40. as a case of Sero-negative primary syphilis.

Prior to jaundice he received 2.7 gm. Novarsenobillon and 1.7 gm. bismuth.

The icterus appeared 22 days after the sixth injection of the first course and within 59 days of the beginning of treatment. On reporting he stated that the jaundice had been present for one week. The urine contained bile and the icteric index was 100. The disease ran a fairly mild course and lasted 34 days.

The drugs were stopped and he was advised about a low fat diet.

Bismuth therapy was resumed 13 days after the clearance of jaundice and Novarsenobillon was introduced four months later.

He progressed favourably but defaulted in August 1941.

Case No. D.4303. Age. 35. Slaughterer.

Admitted on 18.9.40. as a case of Sero-negative primary syphilis.

Treatment prior to jaundice consisted of 4.35 gm. Novarsenobillon and 2.0 gm. bismuth.

Icterus appeared 70 days after the eleventh (last) injection of the first course and within 137 days of the commencement of therapy. The urine contained bile and some albumin. He had had several septic teeth removed one month previously.

He was advised about a low fat diet and received one injection of 20 c.c. of 20% glucose solution. At the next visit, one week later, the icteric index was 66 and the bile and albumin in the urine were much reduced in quantity. Following this visit he defaulted from treatment. Duration of the disease was uncertain.

Case No. D. 4338. Age 32. Vanman.

Admitted on 25.9.40. as a case of Secondary syphilis.

Before jaundice developed he received 4.25 gm. Stabilarsan and 2.7 gm. bismuth.

Icterus appeared 21 days after the eleventh (last) injection of the first course and within 105 days of the commencement of therapy. The jaundice was mild, no bile was detected in the urine and the icteric index was 31. The duration was 28 days.

Fourteen days after the clearance of the jaundice bismuth therapy was resumed and Acetylarsan was introduced three months later. He received, and tolerated, Stabilarsan two months after this. Further progress was satisfactory.

Case No. D. 4392. Age 32. Stoker.

Admitted on 10.10.40. as a case of Primary syphilis.

Antisyphilitic treatment before the onset of jaundice consisted of 4.35 gm. Novarsenobillon and 2.7 gm. bismuth.

Jaundice developed 35 days after the twelfth (last) injection of the first course and within 90 days of the beginning of treatment.

There was icterus of the conjunctivae, the urine contained bile and the icteric index was 25. No prodromal symptoms. The disease ran a fairly mild but prolonged course, the duration being 56 days.

Diet was prescribed and he also received eight intravenous infusions of 20% glucose solution (400 cc) each, together with vitamens C and B, by injection.

Antisyphilitic therapy was resumed with Neocardyl one week before the icterus disappeared. Acetylarsan was introduced three months afterwards. He progressed satisfactorily, but defaulted in May 1941.

Case No. D. 4415. Age 31. First-Aid worker.

Admitted on 14.10.40. as a case of Sero-positive primary syphilis.

The total dosages of drugs before jaundice were 7.15 gm. arsenic (Stabilarsan and Novarsenobillon) and 4.3 gm. bismuth.

The jaundice developed 7 days after the fifth injection of the second course and within 134 days of the beginning of treatment. The onset was accompanied by pains and stiffness in the shoulders.

There was bile in the urine and the icteric index was 16. The duration of the disease was 56 days. He lost 10 lb. in weight.

Advice about diet was given and he received sodium thiosulphate, vitamens C and B, and four intravenous "drips" of 20% glucose solution (each 400 cc.)

Bismuth therapy was resumed 3 days after the disappearance of icterus and Acetylarsan was introduced three weeks later. Three months later he was given Novarsenobillon.

Further progress was satisfactory and he was discharged in 1943.

Case No. D. 4519. Age 53. Cattleman.

Admitted on 7.11.40. as a case of Aortic incompetence.

Treatment before jaundice consisted of 10.7 gm arsenic (Stabilarsan, Novarsenobillon) and 9.75 gm. bismuth.

The jaundice developed 14 days after the sixth injection of the fifth course and within 14 months of the commencement of therapy. At first the urine contained no bile and the icteric index was 36 (later 80); Bile appeared in the urine after three days. There was no detectable hepatic or splenic involvement. He was admitted for 7 days, and readmitted for 9 days after leaving the ward for two days. Slight hepatic enlargement was now present. The duration of the disease was 51 days.

He was put on to the special diet for jaundiced patients and received calcium laevulonate and one intravenous "drip" of 800 c.c. 20% glucose solution.

Bismuth injections were resumed 31 days before the end of the jaundice but caused the slight exacerbation which necessitated his second admission to the ward. Neocardyl was given three months later and followed by Acetylarsan in six months. Progress was satisfactory but he died in 1944 as a result of his cardiac affliction.

Case No. D.4427. Age 52. Unemployed.

Admitted on 16.10.40. as a case of Tabo-paresis.

Prior to jaundice he received 3 cc. Acetylarsan and 0.2 gm. bismuth.

The icterus developed 4 days after the third injection of the first course and within 11 days of the commencement of therapy. The onset was unaccompanied by any symptoms but, after two days he developed a weak feeling in the legs which persisted for two weeks. The urine contained a trace of bile and the icteric index was 19 (later 33). The disease ran a relatively mild but prolonged course, the duration being 52 days.

He was advised about diet and received sodium thiosulphate and vitamen C by injection.

Antisyphilitic treatment was resumed with Neocardyl as soon as icterus disappeared. A second attack developed 76 days after the previous one. The urine contained a little bile. The quantities of bile increased, he lost weight and had slight diarrhoea. A diagnosis of cirrhosis of the liver was made. Three weeks later the jaundice was markedly increased and he appeared to be developing acute yellow atrophy. He was transferred to another hospital and no other information was available.

Case No. D. 4471. Age 27. Student.

Admitted on 28.10.40. as a case of Congenital syphilis.

Prior to jaundice he received 4.05 gm. Stabilarsan and 2.4 gm. bismuth.

Icterus appeared 12 days after the first injection of the second course and within 131 days of the commencement of therapy.

The jaundice was mild and the icteric index was 50. The duration was 23 days. There was a history of an attack of jaundice in 1939.

Antisyphilitic treatment was resumed with bismuth 139 days after the disappearance of jaundice (this long interval resulted from default after the attack of jaundice). Acetylarsan was introduced four months later. Further progress was satisfactory until he left the clinic in 1943.

Case No. D. 4475. Age 25. Miner.

Admitted on 28.10.40. as a case of Secondary syphilis.

Antisyphilitic treatment prior to jaundice consisted of 4.5 gm. Stabilarsan and 3.0 gm. bismuth.

The jaundice appeared 37 days after the tenth (last) injection of the first course and within 105 days of the beginning of treatment. The icterus was mild and was unaccompanied by symptoms.

The urine contained a little bile and a trace of albumin. The icteric index was 25. The duration was 16 days.

Diet was advised and ascorbic acid tablets prescribed.

Anti-syphilitic therapy was resumed with Neocardyl as soon as the jaundice cleared. Acetylarsan was introduced two months later. Four months after this he was given Stabilarsan. Further progress was satisfactory but he defaulted in 1943.

Case No. D. 4545. Age 22. Stoker.

Admitted on 13.11.40. as a case of Sero-positive primary syphilis.

Prior to jaundice he received 4.2 gm. Novarsenobillon and 2.4 gm. bismuth.

Icterus developed 28 days after the tenth injection of the first course and within 98 days of the commencement of therapy. He stated that the jaundice had been present for three weeks before he reported. Icterus was still present and the urine contained bile. The total duration was approximately 35 days.

A low fat diet was prescribed and he also received one 400 c.c. "drip" of 20% glucose solution intravenously and Vitamin C.

Anti-syphilitic therapy was resumed with Neocardyl immediately the jaundice disappeared, and Acetylarsan was introduced three weeks afterwards. Within three months he received Stabilarsan and progressed satisfactorily but defaulted in November, 1941.

Case No. D. 4546. Age 41. Mechanic.

Admitted on 13.11.40. as a case of Latent syphilis.

Dosages of anti-syphilitic drugs given before jaundice were 4.35 gm. Stabilarsan and 2.5 gm. bismuth.

Icterus appeared 7 days after the first injection of the second course and within 98 days of the beginning of treatment. The conjunctivae were jaundiced the urine contained bile and the icteric index was 30. At first the disease was unaccompanied by symptoms but pains in the shoulders and in the wrist joints developed two weeks after the onset and continued for three weeks. The duration was 54 days.

He was advised about a dietary regime and received intravenous infusions of glucose solution on six occasions.

Seven days after the disappearance of icterus anti-syphilitic treatment was resumed with Neocardyl. He defaulted after nine injections and did not report again for eight months. He was then given Acetylarsan and bismuth and later received Stabilarsan.

He progressed satisfactorily and was discharged in 1944.

Case No. D. 4784. Age 23. A.B. Royal Navy.

Admitted on 15.1.41. as a case of Secondary syphilis.

Prior to jaundice he received 4.25 gm. arsenic (Stabilarsan, Novarsenobillon) and 2.6 gm. bismuth.

The jaundice developed 35 days after the tenth injection of the first course and within 96 days of the beginning of treatment. The onset was mild but the jaundice deepened later. The urine contained bile and the icteric index was 50. There were no prodromal or accompanying symptoms, but he lost 12 lb. in weight. The duration was 69 days.

Diet was advised and seven intravenous infusions of glucose (20%) solution were given. With the third and fourth of these "drips" he received 20 units of insulin.

Bismuth therapy was restarted 21 days prior to the disappearance of jaundice, and Acetylarsan was introduced one month afterwards. Nine months later Novarsenobillon was given and progress was uneventful but he defaulted in 1942.

Case No. D. 4811. Age 33. Welder.

Admitted on 21.1.41. as a case of Sero-positive Primary syphilis.

Pre-icteric anti-syphilitic therapy consisted of 3.0 gm. Novarsenobillon and 1.6 gm. bismuth.

The jaundice appeared 18 days after the seventh injection of the first course and within 57 days of the beginning of treatment. The conjunctivae were tinged, the urine contained bile and the icteric index was 22. He stated that he had " 'Flu" shortly before the onset of jaundice. The duration of the disease was 24 days.

Instructions on diet were given and he received Vitamen C by injection.

Bismuth therapy was continued throughout the stage of jaundice, but arsenic was withdrawn.

Acetylarsan was introduced five weeks after the icterus had disappeared. Three months later Novarsenobillon was given. Further progress was uneventful but he defaulted in 1944.

Case No. D. 4842. Age 50. Blacksmith.

Admitted on 11.2.41. as a case of Asymptomatic neuro-syphilis.

He was given 6.45 gm. Stabilarsan, 30 gm. Tryparsamide and 7.6 gm. bismuth before the onset of jaundice.

Icterus appeared 28 days after the twelfth (last) injection of the third course and within 317 days of the beginning of treatment. The onset was accompanied by nausea and the urine was found to contain bile. Within a week the icteric index was 80. Shortly after the last arsenical injection he had abdominal pains and diarrhoea. He was admitted to the ward for 13 days and the duration of the disease was 37 days.

He received the special jaundice diet, two glucose "drips", sodium thiosulphate and calcium laevulonate.

Bismuth injections were resumed 5 days after the disappearance of jaundice. One month later he received five sessions of inductopyrexial treatment and Tryparsamide one month afterwards. Progress was satisfactory.

Case No. D. 4865. Age 34. Labourer.

Admitted on 5.2.41. as a case of Neuro-syphilis.

Anti-syphilitic treatment had started prior to admission. It was continued and the total dosages before jaundice developed were 6.3 gm. Stabilarsan and 3.0 gm. bismuth.

The jaundice appeared 12 days after the eleventh injection of the first course and within 227 days of the beginning of treatment (this long period was due to the drug being withheld for a time following the onset of an arsenical dermatitis two months before the attack of jaundice). The urine contained bile. The icteric index was 58 one week after the onset. Anorexia and gastric pains for one week preceeded the attack. He was admitted to the ward for 8 days and the duration of the disease was 37 days.

A low fat diet, saline purgatives, Mist. Jaund. Co:, and three intravenous infusions of 20% glucose solution were given.

Anti-syphilitic therapy was resumed with Neocardyl 2 days before the end of jaundice and Acetylarsan (infantile) was introduced six months afterwards. Novarsen was given eleven months after this. Beyond a second attack of dermatitis in August, 1942, progress was uneventful.

Case No. D. 4951. Age 22. Driver.

Admitted on 21.2.41. as a case of Sero-negative primary syphilis.

Prior to the onset of icterus he received 3.45 gm. Novarsenobillon and 2.3 gm. bismuth.

The jaundice appeared 28 days after the tenth injection of the second course and within 126 days of the commencement of therapy. The urine contained bile. The icteric index was 100 on the following day. For eight days before the onset of the attack he had anorexia and epigastric pain. He was admitted to the ward for 11 days and the duration of the jaundice was 26 days.

The special diet for jaundiced patients, seven daily intravenous infusions of glucose solution and sodium thiosulphate were given.

Progress was satisfactory and he was transferred to another clinic one month later before anti-syphilitic treatment was resumed.

Case No. D. 4994. Age 20. Seaman.

Admitted on 3.3.41. as a case of Secondary syphilis.

Treatment before jaundice consisted of 10.95 gm. Novarsenobillon and 5.4 gm. bismuth.

Icterus appeared 33 days after the tenth injection of the second course and within 164 days of the commencement of therapy. There were no prodromal symptoms. The jaundice was mild, the urine contained bile and the icteric index was 83. The duration of the disease was 38 days.

Instructions about diet were given. Iodides were prescribed.

Bismuth therapy was not interrupted, only arsenic being withheld. Acetylarsen was introduced three months later and Stabilarsan followed this in three weeks. Approximately four months after the disappearance of jaundice he had a second attack, for which treatment was received outside. The duration was uncertain. Acetylarsan and bismuth were resumed about two months after this second attack but he defaulted after receiving one injection.

Case No. D. 5048. Age 46. Fireman.

Admitted on 14.3.41. as a case of Sero-positive primary syphilis.

Prior to the onset of jaundice he received 4.5 g.m. arsenic (Stabilarsan, Novarsenobillon and Evarsen) and 3.0 gm. bismuth.

The jaundice appeared 42 days after the tenth injection of the first course and within 245 days of the commencement of therapy. The urine contained bile and the icteric index was 80. There was a history of alcohol. The duration of the attack was 51 days.

He received instructions about diet. One injection (2 c.c.) of calcium laevulonate was given.

As soon as jaundice disappeared bismuth therapy was resumed and Acetylarsan was introduced six weeks later. He received Stabilarsan within two months of the end of the attack of jaundice.

Further progress was satisfactory.

Case No. D. 5097. Age 42. Civil Servant.

Admitted on 25.3.41. as a case of Sero-positive primary syphilis

Anti-syphilitic treatment prior to the appearance of jaundice consisted of 4.95 gm. Stabilarsan and 3.0 gm. bismuth.

Icterus developed 49 days after the eleventh (last) injection of the first course and within 115 days of the beginning of treatment. The conjunctivae were tinged and the urine contained a little bile. The icteric index rose to 44. There were pains in the joints, particularly the knee-joints, for about three weeks before the onset of jaundice. The duration was 45 days.

He was put on a low fat dietary regime and received injections of sodium thiosulphate and Vitamen C.

Twenty days before the end of the attack anti-syphilitic therapy was resumed with Neocardyl and Acetylarsan was introduced three months later. Neo-kharsivan was given one month after this and further progress was satisfactory.

Case No. D 5108; Age 63. Riveter.

Admitted on 28.3.41. as a case of Tabes dorsalis.

Prior to jaundice he received 2.0 g.m. Tryparsamide, 18 c.c. Acetylarsan and 15 c.c. Neocardyl.

Icterus appeared 4 days after the second injection of the second course and within 95 days of the beginning of treatment. The conjunctivae were yellow, the urine contained bile and he complained of a feeling of fullness after meals. The icteric index was 17. The jaundice lasted 17 days. Bismuth therapy was resumed and jaundice developed again three weeks after the first attack. This time the skin was yellow, the stools pale and the liver was three finger breadths below the costal margin. The urine contained bile and the icteric index was 66 (later 80). During this attack he was admitted to the ward for 29 days and the duration of the disease was 67 days. The laevulose-tolerance test was within normal limits three months later and a radiological examination of the gall-bladder yielded negative results.

Treatment consisted of diet, injections of Vitamen C and five intravenous infusions of glucose solution (five of 800 c.c. and one of 1,200 c.c.)

Treatment for syphilis was resumed 40 days after the clearance of icterus (second attack) and Acetylarsan was introduced five months later. Further progress was uneventful.

Case No. D. 5125. Age 22. Bombardier.

Admitted on 31.3.41. as a case of Congenital Syphilis

Prior to the onset of jaundice he was given 2.7 g.m. Novarsenobillon and 1.8 gm. bismuth.

The jaundice developed 21 days after the sixth injection of the first course and within 92 days of the commencement of therapy. The onset was accompanied by shoulder pains and a feeling of generalized muscular stiffness. There was bile in the urine. Two weeks before jaundice appeared he complained of stiffness of the hamstring muscles. The attack lasted 35 days.

Diet was advised and he received three (each 1,200 cc.) intravenous infusions of glucose solution every two days.

Bismuth treatment was restarted 25 days after the end of the jaundice and progress was satisfactory until he left the clinic eight months later.

Case No. D.5146. Age 21. Joiner.

Admitted on 4.4.41. as a case of Sero-positive primary syphilis.

Prior to the onset of jaundice he received 8.11 gm. arsenic (Novostab, Stabilarsan and Novarsenobillon) and 2.8 gm. bismuth. Treatment had been commenced prior to admission to the clinic. Icterus appeared 7 days after the seventh injection of the second course and within 142 days of the beginning of treatment. The onset of the jaundice was mild but the icteric tinge of the skin deepened during the following two days. Bile was found in the urine and one week later the icteric index was 125. The duration was 59 days.

He was advised about diet and received six intravenous infusions of glucose solution and injections of sodium thiosulphate and Vitamen C.

Seven days after the disappearance of icterus bismuth therapy was resumed and Acetylarsan was introduced two months later. This was followed by Stabilarsan within two months.

Further progress was satisfactory.

Case No. D.5167. Age 58. Labourer.

Admitted on 11.4.41. as a case of Sero-positive primary syphilis.

Anti-syphilitic treatment before the onset of jaundice consisted of 4.7 gm. Novarsenobillon and 2.1 gm. bismuth.

Icterus appeared 7 days after the second injection of the second course and within 122 days of the beginning of treatment. The conjunctivae were tinged and the urine contained bile. The icteric index was 36 (later 59). He felt well but had pains in the knee-joints before the jaundice began. The course was fairly mild but prolonged, the duration being 57 days.

He was given instructions about diet and received five intravenous "drips" of glucose solution and injections of sodium thiosulphate and vitamen C.

As soon as the icterus cleared up anti-syphilitic therapy was resumed with Neocardyl and Acetylarsan was introduced four months later.

He progressed favourably until he defaulted in 1942.

Case No. D. 5191. Age 55. Pawnbroker's Assistant.

Admitted on 15.4.41. as a case of Tabo-paresis.

Prior to jaundice he received 10 gm. Tryparsamide, 25½ c.c. Acetylarsan and 3.4 gm. bismuth.

The jaundice developed 7 days after the twenty-second (last) injection of the first course and within 139 days of the beginning of treatment. He was markedly jaundiced, bile was found in the urine and the icteric index was 83 (later 118). He was admitted to the ward for 22 days. Two weeks after the onset oedema of the ankles and lumbar region occurred and was present for one week. The duration of the attack was 70 days.

He was put on to a special diet and received intravenous infusions of glucose for seven days and Vitamen B_1 orally.

As soon as icterus disappeared anti-syphilitic treatment was resumed with Neocardyl and Acetylarsan was introduced six weeks afterwards.

Progress was satisfactory.

Case No. D.5220. Age 47. Miner.

Admitted on 23.4.41. as a case of Tabes dorsalis.

Prior to jaundice he was given 22 c.c. Acetylarsan, 2.85 gm. Stabilarsan and 2.4 gm. bismuth.

Jaundice developed about 34 days after the third injection of the third course and approximately 252 days after the commencement of therapy. He reported with a slight degree of jaundice and stated that he had been receiving treatment for it from his own doctor for the past four weeks. The urine contained a trace of bile and the icteric index was 36. The duration was about 40 days.

He was advised to continue with a low fat diet. Sodium thiosulphate and vitamen C were given by injection.

Anti-syphilitic treatment was resumed with bismuth twenty days after the disappearance of icterus. Two months later Acetylarsan was given and this was succeeded by Stabilarsan within three months.

Further progress was satisfactory.

Case No. D. 5266. Age 55. Post Office Sorter.

Admitted on 3.5.41. as a case of Tabes dorsalis.

Prior to jaundice he received 45 c.c. Acetylarsan and 2.1 gm. bismuth.

The jaundice appeared 28 days after the seventeenth (last) injection of the first course and within 81 days of the beginning of treatment. The urine contained bile and one week later the icteric index was 44. About a week prior to the onset he noticed that his urine was "dark". The duration was 60 days.

He was given a diet sheet and received injections of sodium thiosulphate and vitamen C.

Forty-two days before jaundice disappeared anti-syphilitic therapy was resumed with Neocardyl and Acetylarsan was introduced eight months afterwards.

Progress was satisfactory.

Case No. D. 5302. Age 20. Seaman.

Admitted on 13.5.41. as a case of Primary syphilis.

He had started anti-syphilitic treatment before coming to the clinic. This was continued and he received 19.8 gm. Stabilarsan and 6.8 gm. bismuth before the onset of jaundice.

Icterus developed 7 days after the ninth injection of the fourth course and within 250 days of the commencement of therapy. The urine contained bile and three days later the icteric index was 37.

He was advised about diet and saline purgatives. Calcium laevulonate, sodium thiosulphate and Vitamen C were given by injection.

The duration of the disease was uncertain as he defaulted three months later while there was still a trace of bile in the urine.

Case No. D. 5360. Age 25. Farm Servant.

Admitted on 23.5.41. as a case of Secondary syphilis.

Prior to jaundice he received 3.0 gm. Novarsenobillon and 2.1 gm. bismuth.

The jaundice developed 7 days after the ninth injection of the first course and within 79 days of the beginning of treatment. The urine was found to contain bile and the icteric index was 19 (later 114). He was admitted to the ward for 35 days and the total duration of the disease was 49 days. Two weeks before the onset he had pain behind both knees.

He was put on to the special diet and received seven intravenous "drips" of glucose solution and Vitamen C by injection.

Seventeen days before the disappearance of icterus bismuth therapy was resumed and Acetylarsan was introduced two months later. He was given Stabilarsan one month after this.

Further progress was satisfactory.

Case No. D. 5425. Age 37. Slaterer's Labourer.

Admitted on 3.6.41. as a case of Sero-positive primary syphilis.

Prior to jaundice he received 4.8 gm. arsenic (Stabilarsan, Novarsenobillon) and 2.6 gm. bismuth.

The jaundice appeared 9 days after the eleventh (last) injection of the second course and within 114 days of the beginning of treatment. The jaundice was mild and the urine contained a little bile. The icteric index was 28. Three days before the onset he complained of dyspepsia, anorexia and stiffness of the knees and shoulders. Duration was 33 days. He had a dermatitis of the trunk and forearm during the first course.

Diet was advised and he received sodium thiosulphate, calcium laevulonate and Vitamen C by injection.

Seven days after the disappearance of icterus anti-syphilitic treatment was resumed with Neocardyl. Two months later Acetylarsan was used and this was followed by Stabilarsan within six months.

Progress was satisfactory and he was discharged in 1943.

Case No. D. 5577. Age 40. Watch maker.

Admitted on 2.7.41. as a case of Sero-positive primary syphilis.

Treatment had been given prior to coming to the clinic. This was continued and he received 6.0 gm. arsenic (Stabilarsan, Novarsenobillon) and 4.1 gm. bismuth before the onset of jaundice.

Icterus appeared 28 days after the last injection of the first course and within 100 days of the commencement of therapy. Bile was present in the urine and the icteric index was 33 (later 73). Prior to oneet he had a "chill".

A low fat diet was advised. Saline purgatives, Mist. Jaund. Co., Vitamen C and sodium thiosulphate were given.

Anti-syphilitic treatment was resumed with bismuth 14 days after the disappearance of jaundice. Three months later he received Acetylarsan and was transferred shortly afterwards to another clinic.

Progress was satisfactory.

Case No. D. 5673. Age 67. Gardener.

Admitted on 17.7.41. as a case of Sero-positive primary syphilis.

The icterus appeared 179 days after the first course of treatment and within 217 days of the commencement of treatment. (There was a default period between the course of arsenic and the appearance of jaundice). Bile was found in the urine and the icteric index was 26. The duration was 10 days.

A low fat diet was recommended and three glucose "drips" and injections of calcium laevulonate and Vitamen C were given.

As soon as the icterus disappeared bismuth therapy was resumed in small doses. Progress was satisfactory until his transfer to another clinic five weeks later.

Case No. D 5718. Age 43. Taxi driver.

Admitted on 26.7.41. as a case of Sero-positive primary syphilis.

Prior to jaundice he received 11.4 gm. arsenic (Novarsenobillon, Neokharsivan and Evarsen) and 8.4 gm. bismuth.

Icterus developed 6 days after the fourth injection of the fourth course and within 291 days of the beginning of treatment. He was treated for the condition by his own doctor. The duration was 34 days. His teeth were septic and he developed a dermatitis one month before jaundice.

Bismuth therapy was resumed 14 days after the end of jaundice. Acetylarsan was introduced two months later. Stabilarsan was given one month after this. Progress was satisfactory and he was discharged in 1944.

Case No. D 5730. Age 28. Riveter.

Admitted on 27.7.41. as a case of Sero-positive primary syphilis.

Prior to jaundice he received 3.6 gm. arsenic (Novarsenobillon, Neokharsivan) and 1.6 gm. bismuth.

Icterus appeared 3 days after the ninth injection of the first course and within 87 days of the beginning of treatment. He received treatment for the first week from his own doctor. He then had a "chill" which caused an exacerbation of the disease and he was admitted to the ward for 15 days. Bile was present in the urine and the icteric index was 118. Total duration of jaundice was 77 days.

Special diet, saline purgatives and seven intravenous glucose "drips" were given.

Bismuth therapy was resumed 14 days after the end of jaundice. Three months later he received Acetylarsan, and Stabilarsan one month afterwards.

Progress was satisfactory until he defaulted in 1943.

Case No. D 5749. Age 31. Motor driver.

Admitted on 1.8.41. as a case of Sero-positive primary syphilis.

Prior to jaundice he received 4.3 gm. arsenic (Novarsenobillon, Neokharsivan) and 2.8 gm. bismuth.

The jaundice developed 34 days after the tenth injection of the first course and within 107 days of the beginning of treatment. The icterus had been present for 10 days when he reported. Treatment had been given by his own doctor. The urine contained bile and the icteric index was 72. The duration was 23 days.

He was advised to continue on a low fat diet and he received sodium thiosulphate and vitamen C by injection.

Anti-syphilitic treatment was resumed with Neocardyl 10 days before jaundice disappeared. Acetylarsan was introduced within a month and followed by Novarsenobillon two months later. Progress was satisfactory.

Case No. D 5794. Age 38. Blacksmith.

Admitted on 8.8.41. as a case of Latent syphilis.

The dosages prior to jaundice were 1.65 gm. Neokharsivan and 1.1 gm. bismuth.

The jaundice appeared 14 days after the fourth injection of the fourth course and within 38 days of the beginning of treatment. He had already been one week in bed with jaundice when he reported. The urine still contained much bile and the icteric index was 33. Duration was 42 days.

Instructions about diet were given and he received sodium thiosulphate by injection.

Twenty-one days before the end of jaundice bismuth therapy was resumed. After seven injections treatment was withheld as prodromal symptoms occurred. Two glucose "drips" were given. Neocardyl was given shortly afterwards and Acetylarsan was not introduced for over one year.

Progress was satisfactory.

Case No. D 5854. Age 24. Steel worker.

Admitted on 17.8.41. as a case of Sero-positive primary syphilis.

Prior to jaundice he received 4.65 gm. arsenic (Evarsen, Neokharsivan) and 0.2 gm. bismuth.

Icterus appeared 11 days after the twelfth (last) injection of the first course and within 71 days of the commencement of therapy. The jaundice had been present for 10 days when he reported for examination. He also had knee and shoulder pains. The icteric index was 69 and bile was found in the urine. The duration was 56 days.

Diet was advised and he received sodium thiosulphate and Vitamen C by injection.

Acetylarsan injections were given as soon as the icterus disappeared. Stabilarsan was introduced five months later.

Progress was uneventful.

Case No. D 5856. Age 39. Brewery worker.

Admitted on 18.8.41. as a case of Sero-positive primary syphilis.

Prior to jaundice he received 3.05 gm. arsenic (Stabilarsan, Neokharsivan) and 2.5 gm. bismuth.

The icterus developed on the day he received the eighth injection of the first course and within 102 days of the beginning of treatment. The urine contained a little bile and the icteric index was 16. There were several bad teeth associated with oral sepsis. A history of alcohol was obtained. The duration was 14 days. (He was treated in the ward as he had been admitted previously for treatment of a septic circumcision wound.).

A low fat diet was given.

Bismuth therapy was never stopped during the jaundice. He received Acetylarsan one month later and Stabilarsan two months after that. Progress was satisfactory until he defaulted.

Case No. D. 5858. Age 32. Miner.

Admitted on 18.8.41. as a case of Sero-positive primary syphilis.

Before the onset of jaundice he received 1.3 gm. Evarsen and 0.4 gm. bismuth.

The jaundice developed 86 days after the third injection of the first course and within 102 days of the beginning of treatment. There was a history of alcohol and he had a few septic teeth. The jaundice was marked and he was admitted one week later. The icteric index was 75 (later 118) and bile was present in the urine. He was in the ward for 9 days and the duration of the disease was 60 days.

He received a special diet, Mist. Jaund. Co., seven intravenous glucose "drips" and injections of calcium laevulonate.

He received one injection of bismuth as soon as the icterus disappeared but defaulted immediately afterwards.

Case No. D 5893. Age 69. Unemployed.

Admitted on 20.8.41. as a case of Tertiary syphilis (gumma)

Dosages prior to onset of icterus were 2.35 gm. trivalent arsenic (Stabilarsan, Neokharsivan), 57 cc. Acetylarsan and 6.3 gm. bismuth.

Icterus appeared 7 days after the ninth injection of the fourth course and within 357 days of the beginning of treatment. The urine contained a little bile and the icteric index was 42 (later 133). Onset was preceeded by diarrhoea for one week. Duration: 42 days.

A low fat diet was recommended and one intravenous infusion of 800 c.c. 20% glucose was given.

Bismuth injections were restarted 21 days after the disappearance of jaundice and no more arsenic was given prior to his defaulting in 1943.

Case No. D 5906. Age 39. Private, (Army).
Admitted on 22.8.41. as a case of Latent syphilis.

Anti-syphilitic treatment before the onset of jaundice consisted of 5.25 gm. arsenic (Neokharsivan and Novarsenobillon) and 3.4 gm. bismuth.

Icterus developed 6 days after the second injection of the second course and within 104 days of the commencement of therapy.

The urine contained bile and the icteric index was 32.

Admission was refused and he failed to report again.

Case No. D. 5925. Age 25. Driller.

Admitted on 25.8.41. as a case of Sero-negative primary syphilis

Prior to icterus he received 4.2 gm. arsenic (Novarsenobillon, Neokharsivan) and 2.9 gm. bismuth.

The jaundice developed 7 days after the first injection of the second course and within 120 days of the beginning of treatment. Admission to the ward was refused. The urine contained bile and one week later the icteric index was 80 (later 126). Pain in the shoulders preceeded onset by one week. Duration was 59 days.

Diet was advised and he received five intravenous infusions of glucose solution and injections of calcium laevulonate and Vitamen C.

Progress was satisfactory but he defaulted before anti-syphilitic treatment could be resumed.

Case No. D. 5974. Age 36. Private (Army)

Admitted on 2.9.41. as a case of Sero-positive primary syphilis.

Prior to jaundice he received 11.4 gm. Neokharsivan and 5.5 gm. bismuth. Treatment had been started outside.

Icterus appeared 6 days after the second injection of the third course and within 241 days of the beginning of treatment. The only prodromal symptoms was nausea for one week. The urine contained bile and the icteric index was 19 (later 36). Duration was 14 days.

Bismuth treatment was started seven days before the disappearance of jaundice. Three months later he received Acetylarsan and within three weeks Stabilarsan was substituted for this.

Progress was satisfactory.

Case No. D 6035. Age 58. Manager.

Admitted on 12.9.41. as a case of Tabes dorsalis.

Before jaundice the total dosages of anti-syphilitic drugs were 11.0 gm. Tryparsamide, 9 c.c. Acetylarsan and 3.8 gm. bismuth.

Icterus developed 11 days after the sixteenth injection of the first course and within 144 days of the beginning of treatment. The urine contained a little bile and the icteric index was 29 (later 33). The disease lasted 17 days.

He was advised about diet and given Mist. Jaund. Co., and Vitamen C.

As soon as icterus disappeared bismuth treatment was resumed. Shortly after this he underwent an operation for gastric ulcer. Bismuth and Tryparsamide were received later and progress was satisfactory.

Case No. D 6057. Age 36. Road worker.

Admitted on 16.9.41. as a case of Sero-positive primary syphilis.

Before jaundice he was given 7.2 gm. arsenic (Stabilarsan, Neokharsivan) and 2.9 gm. bismuth.

The jaundice developed 10 days after the fifth injection of the second course and within 123 days of the commencement of therapy. The icterus was marked the urine contained much bile and the icteric index was 44. Duration of jaundice was 25 days.

Diet and injections of calcium laevulonate and sodium thiosulphate were given.

Before anti-syphilitic treatment could be resumed he was transferred to another clinic.

Case No. D 6062. Age 27. Stoker.

Admitted on 17.9.41. as a case of Latent syphilis.

Prior to jaundice he received 14.65 gm. trivalent arsenic (Stabilarsan, Neokharsivan, Novarsenobillon), 13 c.c. Acetylarsan and 7.15 gm. bismuth.

The jaundice developed 7 days after the eighth injection of the fourth course and within 23 months of the beginning of treatment. There was a history of alcohol. The icterus was mild and the urine contained bile. The icteric index was 32. There was a history of pains in shoulders and elbows two months prior to onset. The duration was 28 days.

Special diet was ordered. Four glucose "drips" and Vitamen C were given.

Bismuth treatment was resumed 14 days after the disappearance of jaundice and Acetylarsan was introduced within one month. Progress was satisfactory.

Case No. D 6071. Age 59. Labourer.

Admitted on 17.9.41. as a case of Syphilitic orchitis.

Anti-syphilitic treatment before the onset of jaundice consisted of 2.7 gm. trivalent arsenic (Stabilarsan, Novarsenobillon), 30 c.c. Acetylarsan and 2.4 gm. bismuth.

Icterus appeared 28 days after the second injection of the third course and within 13 months of the commencement of therapy. There was occasional diarrhoea during the three weeks before onset. The teeth were bad. The urine contained a little bile. The duration was 14 days.

Diet was advised and he received 20 c.c. injections of 20% glucose solution.

Injections of Acetylarsan and bismuth were resumed 63 days after the disappearance of jaundice and Stabilarsan was introduced six months later. Progress was satisfactory.

Case No. D 6080. Age 33. Unemployed.

Admitted on 18.9.41. as a case of Sero-positive primary syphilis.

Prior to jaundice he was given 5.5 gm. Neokharsivan and 3.2 gm. bismuth.

Icterus appeared 7 days after the tenth injection of the second course and 146 days from the beginning of treatment. The jaundice was mild and the urine contained a little bile. The duration was 7 days. He had a "cold" three weeks before the onset.

Diet, sodium thiosulphate and one intravenous glucose "drip" were prescribed.

Progress was satisfactory but he defaulted prior to resumption of anti-syphilitic treatment.

Case No. D 6097. Age 21. No record of occupation.

Admitted on 22.9.41. as a case of Congenital syphilis

Treatment prior to jaundice consisted of 3.0 gm. arsenic (Novarsenobillon, Neokharsivan) and 1.7 gm. bismuth.

The jaundice developed 15 days after the twelfth (last) injection of the first course and within 93 days of the commencement of therapy. Bile was detected in the urine and the icteric index was 45. Duration was 32 days.

He was advised about a low-fat diet. Four intravenous "drips" of glucose solution were given along with injections of Vitamens C and B_1.

Anti-syphilitic treatment was resumed with Neocardyl five days after the disappearance of jaundice and Tryparsamide was introduced two months later.

Further progress was satisfactory.

Case No. D.6141. Age 36. Unemployed.

Admitted on 29.9.41. as a case of G.P.I.

He was admitted to the ward for two days as he was suffering from a mild attack of jaundice (icteric index 67). He was then transferred to a mental institution where he received 48 gm. Tryparsamide and 32 c.c. Bisantol. After this he was readmitted to the clinic and was given 9.0 gm. Tryparsamide and 1.0 gm. bismuth before jaundice developed.

Icterus appeared 7 days after the fifth injection of the third course and fourteen months from the beginning of treatment. One month before onset he had erysipelas. His teeth were very bad. The jaundice was mild at first, bile was found in the urine and the icteric index was 71. Three days later it increased. Five days after the onset he was admitted to the ward as he had ascites and pitting oedema of both legs. The icteric index was 91 and the urine contained much bile. Special diet, saline purgatives and Mist. Jaund. Co., were ordered. On the third and fourth days after admission he was given 0.1 gm. Mersalyl intramuscularly. On the sixth day haematemesis and meleana occurred. The abdomen was very tense and was "tapped". In the afternoon his condition deteriorated rapidly. The pulse rate was 104 per minute and weak. The respirations were 28 per minute. The blood pressure fell to 75/50. He was given coramine intramuscularly also one pint of blood intravenously. He died in the evening.

A post-mortem examination was conducted and the principle findings were:-

(1) Advanced atrophic cirrhosis of the liver (with recent extensive necrosis of the component liver cells). Marked enlargement of the spleen.

(2) Marked ascites.

(3) Well marked oesophageal varices - haematemesis probably from rupture of some of these.

(4) Congestion and oedema of the lungs.

(5) Toxic changes in most organs.

Case No. D. 6172. Age 24. Barman.

Admitted on 4.10.41. as a case of Secondary syphilis.

The dosages of antisyphilitic drugs given before onset of jaundice were 3.3 gm. Neokharsivan and 2.6 gm. bismuth.

The jaundice developed 7 days after the ninth injection of the first course and within 184 days of the beginning of treatment. There was a history of alcohol. The urine contained bile and the icteric index was 32. The disease lasted 70 days.

He was put on special diet. Four intravenous infusions (800 c.c.) of 20% glucose solution and three injections of 40 c.c. glucose solution were given.

Twenty-one days after the icterus had cleared up bismuth treatment was resumed and Stabilarsan (intramuscular) was introduced one month later.

Progress was satisfactory.

Case No. D.6176. Age 21. Radio operator (Merchant Navy).

Admitted on 6.10.41. as a case of Sero-positive primary syphilis.

The dosages of anti-syphilitic drugs given before the onset of jaundice were 4.8 gm. arsenic (Novarsenobillon, Neokharsivan) and 2.7 gm. bismuth.

Icterus appeared 27 days after the fourteenth (last) injection of the first course and within 95 days of the beginning of treatment. At first the jaundice was mild, the urine contained bile and the icteric index was 45 (later 87). The jaundice deepened and he was admitted to the ward for 5 days. Prior to onset he had dyspepsia for 3 days. The duration of the disease was 47 days.

He was put on diet. Four glucose "drips" (1,200 c.c.) and sodium thiosulphate were given.

Bismuth therapy was resumed 5 days after the end of the attack and Acetylarsan was introduced two months later and succeeded by Stabilarsan within two months.

He progressed favourably and later left the clinic for treatment elsewhere.

Case No. D. 6220. Age 29. Railwayman.

Admitted on 12.10.41. as a case of Sero-negative primary syphilis.

Prior to the onset of icterus he received 7.05 gm. arsenic (Stabilarsan, Neokharsivan) and 4.2 gm. bismuth.

Jaundice appeared 7 days after the seventh injection of the second course and within 147 days of the commencement of therapy. Onset was preceeded by nausea for three weeks. The jaundice was mild, the urine contained bile and the icteric index was 63. The duration was 21 days.

Advice about diet was given and he received one 800 cc. intravenous infusion of 20% glucose, also injections of sodium thiosulphate and Vitamen C.

Bismuth therapy was resumed 7 days after the end of jaundice and Acetylarsan was introduced within two months. One month later he was given Stabilarsan. Further progress was satisfactory and he was discharged in 1944.

Case No. D. 6268. Age 64. Mason.

Admitted on 21.10.41. as a case of Tabes dorsalis.

Prior to icterus he received 51 c.c. Acetylarsan and 2.5 gm. bismuth.

The jaundice developed 14 days after the fourth injection of the second course and within 116 days of the beginning of treatment. The urine contained bile and the icteric index was 31 (later 45). Onset was preceeded for ten days by neck pains. The duration was 31 days. He was put on diet. Four intravenous infusions of 20% glucose and calcium laevulonate were given.

Three days before the final clearance of icterus anti-syphilitic treatment was resumed with bismuth. He later defaulted but returned four months later when Acetylarsan was given. He finally defaulted in 1943.

Case No. D. 6396. Age 20. Seaman.

Admitted on 12.11.41. as a case of Sero-positive primary syphilis.

Treatment before the attack of jaundice consisted of 4.35 gm. Neokharsivan and 2.9 gm. bismuth.

Icterus appeared 15 days after the first injection of the second course and within 117 days of the beginning of treatment. Bile was found in the urine, and the icteric index rose to 67. For three days before the onset he complained of epigastric pain and headaches. The attack lasted 36 days.

He was advised about diet and received four intravenous infusions of glucose solution and injections of sodium thiosulphate and Vitamen C.

Immediately the jaundice disappeared anti-syphilitic treatment was restarted with bismuth and Acetylarsan was introduced within one month. This was succeeded by Stabilarsan one month later.

Progress was satisfactory but he defaulted in 1943.

Case No. D 6403. Age 27. Motor driver.

Admitted on 14.11.41. as a case of Latent Syphilis.

Prior to jaundice he received 2.4 gm. Neokharsivan and 1.4 gm. bismuth.

Jaundice appeared 34 days after the sixth injection of the first course and within 62 days of the commencement of therapy. The jaundice was marked and the urine contained bile. The icteric index was 63 (later 114). He was admitted for 9 days. Bile was found in the urine three weeks before the onset but disappeared after a few days. Duration of the disease was 29 days. He was put on diet. Glucose orally and injections of sodium thiosulphate and Vitamen C were given.

Treatment was resumed with Acetylarsan and bismuth 28 days after the disappearance of jaundice and Stabilarsan was introduced three months afterwards. About seven months after the first attack he again developed jaundice. The icteric index was 59 and the urine contained bile. The jaundice was mild and lasted 14 days. He later received and tolerated bismuth and Acetylarsan.

Progress was satisfactory.

Case No. D 6432. Age 50. Engineer.

Admitted on 18.11.41. as a case of Sero-positive primary syphilis.

Prior to jaundice he received 4.5 gm. Neokharsivan and 2.4 gm. bismuth.

Icterus appeared 30 days after the fourteenth 9last) injection of the first course and within 85 days of the beginning of treatment. The jaundice was mild and the urine contained a trace of bile. There was no liver enlargement. During the five days preceding onset he had pains in the arms and legs. The duration of the jaundice was 5 days.

Diet was advised and he was given three "drips" (800 c.c.) of glucose solution and four injections of Vitamen C.

Bismuth therapy was not stopped and Acetylarsan was introduced one month after the jaundice had disappeared. Four months after this he was given Stabilarsan. Progress was satisfactory.

Case No. D. 6457 . Age 55. Labourer.

Admitted on 22.11.41. as a case of Sero-positive primary syphilis.

Dosages prior to jaundice were 6.3 gm. arsenic (Neokharsivan, Novarsenobillon) and 3.8 gm. bismuth.

The jaundice appeared 7 days after the fifth injection of the second course and within 167 days of the beginning of treatment. The jaundice was marked and he refused admission, but accepted ward treatment later. The urine contained bile and the icteric index was 71 (later 111). Purpuric spots appeared six weeks after onset and ascites was found. The liver was moderately enlarged. Oedema of the legs accompanied the ascites and lasted 10 days. He had pains in the arms and knees seven weeks prior to the onset of the disease. He was 15 days in hospital and the duration of the attack was 91 days. He had several bad teeth and a "cold" at the beginning of jaundice.

He was put on diet, Mist. Jaund. Co., and Vitamen C parenterally were given.

Anti-syphilitic treatment was resumed 7 days after the disappearance of icterus and Acetylarsan was introduced within two weeks. Stabilarsan (I.M.) was substituted for this two months later. Progress was good and he was discharged in 1944.

Case No. D. 6479. Age 21. Stoker.

Admitted on 26.11.41. as a case of Sero-positive primary syphilis.

Prior to onset of jaundice he was given 5.1 gm. Neokharsivan and 2.7 gm. bismuth. Treatment had been commenced before he attended the clinic.

The icterus developed 25 days after the tenth injection of the first course and within 104 days of the beginning of treatment.

The icteric index was 133 and the urine contained bile. He was sent to the Naval sick-bay for treatment. He was 14 days in hospital and the duration of the disease was 22 days.

Bismuth treatment was resumed 15 days after the end of jaundice and Acetylarsan was introduced two months later. One year later he was put on to Mapharside. Progress was satisfactory and he was transferred to another clinic in 1943.

Case No. D 6496. Age 43. Stoker.

Admitted on 28.11.41. as a case of Syphilitic myocarditis.

Treatment prior to jaundice consisted of 0.9 gm. Stabilarsan and 1.1 gm. bismuth.

Icterus developed 7 days after the sixth injection of the first course and within 49 days of the beginning of treatment. The jaundice was mild, the urine contained bile and the icteric index was 40 (later 80). The attack lasted 11 days.

Diet was advised and calcium laevulonate and Vitamen C were given in 20 c.c. 20% glucose solution on two occasions.

Bismuth therapy was resumed within 7 days of the disappearance of icterus and Acetylarsan was introduced three months later. Six months after this he received Evarsen without ill effects.

Case No. D. 6504. Age 24. Private (Army)

Admitted on 1.12.41. as a case of Sero-positive primary syphilis.

Prior to onset of jaundice he received 3.6 gm. Neokharsivan and 3.1 gm. bismuth. Before coming to the clinic he had been given two courses of arsenic and bismuth, the exact dosages not being recorded.

Jaundice appeared 8 days after the eighth injection of the fourth course and within approximately 10 months of the beginning of treatment. The jaundice was mild, the urine contained bile and the icteric index was 21. Nausea for seven days preceded the onset. The duration was 35 days.

As soon as icterus disappeared bismuth therapy was resumed and Neokharsivan was given one week afterwards. Progress was satisfactory but he defaulted four months afterwards.

Case No. D. 6509. Age 42. Welder's labourer.

Admitted on 1.12.41. as a case of Tertiary syphilis.

Prior to jaundice he received 1.8 gm. Neokharsivan, 15 cc. Acetylarsan and 3.9 gm. bismuth.

The jaundice appeared 34 days after the fourteenth (last) injection of the first course and within 81 days of the beginning of treatment. The attack was of a mild nature, the urine contained bile and the icteric index was 67. The duration was 35 days.

Diet was advised and two intravenous infusions of glucose solution along with Vitamen C were given.

Bismuth therapy was resumed 21 days before the disappearance of jaundice. Two months later he received Acetylarsan and Novarsenobillon was substituted for this seven months afterwards.

Progress was satisfactory.

Case No. D. 6537. Age 32. Joiner.

Admitted on 5.12.41. as a case of Sero-positive primary syphilis.

Treatment before the onset of jaundice consisted of 1.35 gm. bismuth. No details were available of the three intravenous and three intramuscular injections he received before attending the clinic.

Jaundice developed 14 days after the tenth injection of the first course and within 77 days of the beginning of treatment. The icteric index was 133 and the urine contained bile. He was admitted to the ward for 6 days and the duration of the jaundice was 42 days. The onset was preceded by a heavy "cold". He had periodontal disease of the teeth. When he first reported to the clinic (i.e. about two months before jaundice) he had an exfoliative dermatitis.

He was put on diet. Six intravenous infusions of glucose solutions, Mis. Jaund. Co., calcium laevulonate and Vitamen C were given.

Bismuth therapy was resumed 4 days after the disappearance of jaundice. No more arsenic was given. Progress was satisfactory and he was discharged in 1945.

Case No. D. 6559. Age 31. Rigger's mate R.N.

Admitted on 10.12.41. as a case of Sero-negative primary syphilis

Prior to onset of jaundice he received 6.45 gm Neokharsivan and 3.4 gm. bismuth.

The jaundice developed 3 days after the second injection of the second course and within 101 days of the beginning of treatment. The urine contained bile and the icteric index was 63. The duration was 21 days.

He was advised about a low fat dietary regime and Mist. Jaund. Co., was prescribed.

Before any more anti-syphilitic treatment was given he had a relapse of the jaundice within 11 days of the first attack. A history of alcohol was obtained. The icteric index was 53 (later 100) and the urine contained bile. The attack lasted 28 days. Bismuth therapy was resumed and followed shortly by Acetylarsan. Two months later Stabilarsan was given. Then 63 days after the first relapse he had a second relapse. The icteric index was 95 (later 105). This attack lasted 21 days. One week after the jaundice disappeared bismuth injections were restarted. He later received Acetylarsan and Neokharsivan. He progressed satisfactorily but defaulted in 1943.

Case No. D 6561. Age: Not recorded. Boot repairer.

Admitted on 10.12.41. as a case of Congenital syphilis.

Before the attack of jaundice he was given 4.5 gm. trivalent arsenic (Stabilarsan, Novarsenobillon) 6 c.c. Acetylarsan and 3.3 gm. bismuth.

Icterus appeared 14 days after the third injection of the second course and within 237 days of the beginning of treatment. The jaundice was severe and he was admitted to the Ward for 14 days. The urine contained much bile and the icteric index rose to 174. There was no liver enlargement. The duration was 26 days.

He was put on diet. One intravenous glucose "drip" and Mist. Jaund. Co. were given.

Anti-syphilitic treatment was resumed with Neocardyl 7 days after the disappearance of jaundice. Acetylarsan was given 10 months later.

Progress was satisfactory.

Case No. D. 6578. Age 29. Slater.

Admitted on 12.12.41. as a case of Sero-positive primary syphilis.

Prior to jaundice he received 2.4 gm. Stabilarsan and 1.1 gm. bismuth.

Icterus appeared 69 days after the sixth injection of the first course and within 102 days of the beginning of treatment. After the last injection and before the appearance of jaundice he had a severe attack of exfoliative dermatitis. Bile was found in the urine and the icteric index was 91 (later 138). The onset of jaundice was accompanied by a spontaneous haemorrhage from the right ear. He was in the ward for 18 days and the duration of the disease was 46 days.

Diet and Vitamen C were prescribed.

Anti-syphilitic treatment was resumed with Bisantol 60 days after the disappearance of jaundice. Progress was satisfactory until he was transferred in the month following.

Case No. D. 6604. Age 36. Steel-worker.

Admitted on 17.12.41. as a case of Tertiary syphilis (gumma)

Prior to the onset of jaundice he received 3.0 gm. Stabilarsan, 5 c.c. Acetylarsan and 3.2 gm. bismuth.

Icterus appeared 8 days after the eleventh (last) injection of the first course and within 102 days of the beginning of treatment. He was very jaundiced. The urine contained much bile and the icteric index was 125. The disease lasted 41 days.

He was advised about diet, Mist. Jaund. Co., and calcium laevulonate were prescribed.

As soon as icterus disappeared bismuth treatment was resumed. He progressed favourably until he was transferred to another clinic shortly afterwards.

Case No. D. 6602. Age 50. Miner.

Admitted on 17.12.41. as a case of Tertiary syphilis

Prior to onset of jaundice he received 2.25 gm. trivalent arsenic (Stabilarsan, Novarsenobillon) 48 c.c. Acetylarsan and 4.2 gm. bismuth.

The jaundice developed 14 days after the third injection of the third course and within 209 days of the commencement of treatment. The jaundice had been present for four weeks when he reported. Treatment had been given by his own doctor. He was still jaundiced, there was no bile in the urine and the icteric index was 31. For one month prior to the onset he had complained of "rheumatism - worse in the mornings". The disease lasted 63 days. He had a chronic bursitis of right knee joint.

He was given instructions about diet.

As soon as jaundice disappeared anti-syphilitic treatment was resumed with Neocardyl and Acetylarsan was introduced three months later. One year after this he was given Stabilarsan. Progress continued to be satisfactory until he defaulted in 1944.

Case No. D. 6614. Age 51. Foreman.

Admitted on 17.12.41. as a case of Sero-positive secondary syphilis.

Anti-syphilitic treatment before the onset of jaundice consisted of 4.8 gm. Neokharsivan and 3.0 gm bismuth.

The jaundice appeared 21 days after the tenth injection of the first course and within 88 days of the beginning of treatment. The attack was mild, the urine contained bile and the icteric index was 31. His teeth were decayed. There was a history of an attack of jaundice two years before. The duration of the present attack was 21 days.

A low fat diet was advised.

Immediately jaundice disappeared bismuth treatment was resumed and Acetylarsan was given one month later. During the next month he received Stabilarsan.

Progress was satisfactory and he was discharged in 1944.

Case No. D. 6617. Age 17. Waiter.

Admitted on 19.12. 41. as a case of Secondary syphilis.

Prior to onset of icterus he received 4.5 gm. Neokharsivan and 3.0 gm. bismuth.

The jaundice developed 31 days after the tenth injection of the first course and within 95 days of the commencement of therapy. It had been present for one week before he reported. Treatment during this time was given by his own doctor. The urine contained bile and the icteric index was 48. Duration was 11 days.

Diet was advised and he received injections of sodium thiosulphate.

As soon as icterus disappeared bismuth injections were restarted and Acetylarsan was introduced one month later. Six weeks after this Stabilarsan was used. He progressed satisfactorily.

Case No. D. 6618. Age 21. A.B., Royal Navy.

Admitted on 19.12.41. as a case of Secondary syphilis.

Prior to jaundice he received 1.95 gm. Neokharsivan and 1.2 gm. bismuth.

The jaundice developed 105 days after the seventh injection of the first course and within 126 days of the beginning of treatment. Bile was present in the urine and the icteric index was 48 (later 59). He had an inflamed varicose ulcer of the left leg. Part of his treatment was received in the Naval sick-bay. Duration of the attack was 33 days.

A low fat diet was advised.

Bismuth treatment was resumed about 63 days after the disappearance of the icterus. Progress was satisfactory until he was transferred shortly afterwards.

Case No. D.6623. Age 29. A.B. Royal Navy.

Admitted on 20.12.41. as a case of Sero-negative primary syphilis

Treatment prior to jaundice consisted of 3.9 gm arsenic (Neokharsivan, Stabilarsan) and 2.8 gm. bismuth.

Icterus appeared 8 days after the eleventh (last) injection of the first course and within two and a half months of the beginning of treatment. The jaundice developed during the "rest period" after the first course and there was still an icteric tinge present when he reported. No bile was present in the urine, but the icteric index was 22. The duration was 30 days.

A low fat diet was advised.

As soon as jaundice disappeared bismuth injections were resumed. Acetylarsan was introduced three months later and Stabilarsan was used two months afterwards. He progressed satisfactorily but defaulted in November, 1942.

Case No. D.6639. Age 24. Stoker.

Admitted on 24.12.41. as a case of sero-positive primary syphilis.

Prior to onset of jaundice he received 5.1 gm. Neokharsivan and 2.5 gm. bismuth. Treatment had commenced before admission to the clinic.

The jaundice appeared 33 days after the last injection of the first course and within about 5 months of the beginning of treatment. The disease lasted 28 days and he received in-patient treatment in a Naval hospital.

No icterus was detected when he reported back to the clinic.

Two weeks after the disappearance of the jaundice bismuth injections were resumed and Acetylarsan was introduced two months later. He later received Stabilarsan. Progress was good until he defaulted in 1943.

Case No. D.6646. Age 43. Hotel valet.

Admitted on 26.12.41. as a case of Sero-negative primary syphilis

Prior to jaundice he was given 11.55 gm. Neokharsivan and 7.9 gm bismuth.

Jaundice developed a week or so after the sixth injection of the third course and within about eight months of the beginning of treatment. He stated, on reporting, that he had been 5 weeks in a medical ward with jaundice. No clinical jaundice was now present, there was no bile in the urine and the icteric index was 25. He felt well.

About seven days after the disappearance of icterus bismuth injections were resumed and Acetylarsan was introduced in the following month. He later received Stabilarsan and progressed satisfactorily until his discharge in 1944.

Case No. D. 6651. Age 36. Labourer.

Admitted on 27.12.41. as a case of Sero-positive primary syphilis.

Before the onset of jaundice he received 3.15 gm Stabilarsan and 1.8 gm bismuth.

The jaundice appeared 10 days after the tenth injection of the first course and within 56 days of the beginning of treatment. The urine contained bile and the icteric index was 55 (later 62). During the two weeks preceding onset he had stiffness of the joints and noticed that his urine was "dark". Duration was 41 days.

A low fat diet was advised and three intravenous glucose "drips" were given.

As soon as jaundice disappeared bismuth was resumed but he defaulted after the first injection.

Case No. D.6667. Age 36. Riggers mate, Royal Navy.

Admitted on 31.12.41. as a case of sero-negative primary syphilis.

Prior to icterus he received 7.3 gm arsenic (Neokharsivan, Novarsenobillon) and 3.2 gm bismuth. Treatment was started before he came to the clinic.

Icterus appeared 28 days after the sixth injection of the second course and within 134 days of the beginning of treatment. The jaundice was slight, the urine contained bile and the icteric index was 37 (later 52). There had been generalized aches and pains during the month preceding onset. The duration was 7 days.

He was put on diet and sodium thiosulphate was given.

Antisyphilitic treatment was resumed with bismuth 14 days after the clearance of jaundice. Two months later he was given Acetylarsan and received Stabilarsan in the following month. Progress was good until he defaulted in 1943.

Case No. D 6740. Age 46. Gas-producer.

Admitted on 14.1.42. as a case of Sero-positive primary syphilis.

Before the onset of jaundice he was given 2.4 gm Neokharsivan and 1.1 gm bismuth.

Jaundice appeared 59 days after the fourth injection of the second course and within 79 days of the beginning of treatment. There was a history of alcohol and his teeth were very carious. The jaundice had been present for two weeks before he reported. The urine contained bile and the icteric index was 67 (later 111). He was admitted to the ward for 40 days. The total duration was 84 days. He was put on Diet. Mist. Jaund. Co., and one intravenous glucose "drip" were given.

Acetylarsan was given 14 days after the disappearance of jaundice. A year later he developed a second attack of jaundice during a "rest period". Some time later he had a third attack of jaundice in association with bronchopneumonia and developed oedema of the ankles and ascites.

In may 1944 information was received that he had died (cause not stated).

Case No. D. 6787. Age 35. Seaman.

Admitted on 24.1.42. as a case of Sero-negative primary syphilis.

Prior to jaundice he received 4.05 gm Neokharsivan and 2.4 gm bismuth.

Icterus developed 10 days after the ninth injection of the first course and within 14 months of the beginning of treatment. The jaundice was mild, the urine contained a trace of bile and the icteric index was 28.

He was instructed about a low fat dietary regime and received sodium thiosulphate and Vitamen C.

Three days after the onset of jaundice he defaulted.

Case No. D. 6856. Age 37. Seaman.

Admitted on 6.2.42. as a case of Secondary syphilis.

Treatment had been started prior to admission to the clinic. This was continued and he received 7.05 gm Neokharsivan and 3.1 gm bismuth before the onset of jaundice.

The jaundice appeared 8 days after the eighth injection of the second course and within about 5 months of the commencement of therapy. The urine contained bile and the icteric index was 105. He was sent to the naval sick bay for admission.

The duration was 53 days.

Bismuth injections were resumed 24 days after the disappearance of jaundice and Acetylarsan was introduced four weeks later and two months afterwards Stabilarsan was used. Progress was satisfactory until he defaulted in 1943.

Case No. 6864. Age 34. Seaman.

Admitted on 6.2.42. as a case of Sero-negative primary syphilis.

Prior to jaundice he received 4.8 gm arsenic (Neokharsivan, Novarsenobillon) and 3.0 gm. bismuth.

The jaundice appeared 32 days after the tenth injection of the first course and within 94 days of the beginning of treatment. Bile was found in the urine and the icteric index was 24. The duration was 11 days.

Instructions about diet were given.

Bismuth therapy was resumed as soon as the jaundice disappeared. He later received Novarsenobillon. Progress was satisfactory until he defaulted in 1943.

Case No. D. 6872. Age 63. Retired.

Admitted on 9.2.42. as a case of Tabo-paresis.

Prior to jaundice he received 26 c.c. Acetylarsan and 2.4 gm. bismuth.

Jaundice developed 16 days after the fifth injection of the second course and within 119 days of the beginning of treatment. The icteric index was 91 and he was admitted to the ward for 20 days. The disease lasted 36 days.

Diet and six intravenous infusions (800 c.c.each) of 20% glucose solution were given.

Treatment was not resumed as he developed oedema of both legs after leaving the clinic. Radiological examination revealed inflammatory changes in both lungs. He died a month later.

Case No. D. 6890. Age 29. Barman.

Admitted on 13.2.42. as a case of Secondary syphilis.

Prior to jaundice he received 2.7 gm. Novarsenobillon and 1.4 gm bismuth.

The jaundice appeared 41 days after the seventh injection of the first course and within 84 days of the beginning of treatment. The icteric index was 42 (later 66) and he vomited and collapsed during examination. The teeth were bad. He was admitted to the ward for 16 days and the duration of the attack was 26 days.

Diet and one intravenous infusion of glucose solution were prescribed.

Immediately jaundice disappeared anti-syphilitic treatment was resumed with bismuth and Acetylarsan was introduced one month later. He later received Stabilarsan.

Progress was satisfactory.

Case No. D. 6915. Age 43. Doorkeeper.

Admitted on 16.2.42. as a case of Sero-negative primary syphilis.

Prior to jaundice he received 4.65 gm Novarsenobillon and 2.8 gm bismuth.

Icterus appeared 35 days after the fourteenth (last) injection of the first course and within 117 days of the commencement of therapy. The jaundice was mild. The urine contained bile and the icteric index was 77 (later 133). He lost about a stone in weight.

The attack lasted 60 days.

He was advised about diet. He received one glucose "drip" and injections of sodium thiosulphate and Vitamen C.

Seven days after the disappearance of jaundice bismuth injections were resumed. After two weeks he received Acetylarsan, Stabilarsan was substituted four months afterwards. Further progress was satisfactory.

Case No. D. 6932. Age 27. Ship's Cook.

Admitted on 19.2.42. as a case of Latent syphilis.

Before the attack of jaundice he was given 4.95 gm Novarsenobillon and 2.6 gm bismuth.

Jaundice developed 27 days after the first injection of the second course and within 124 days of the beginning of treatment. There was a "chill" immediately preceding onset. Nausea had been present off and on during three weeks. The urine contained bile and the icteric index was 63 (later 182). He was admitted to the ward for 15 days. Two weeks after onset the liver was enlarged to about two finger breadth's below the costal margin and the spleen was palpable.

The duration was 32 days.

He was put on diet, two intravenous infusions of glucose solution and Vitamen C were given.

Bismuth injections were resumed 34 days after the end of the attack and Evarsen was introduced within two months.

Progress was satisfactory, but he defaulted in 1943.

Case No. D.6945. Age 22. A.B., Royal Navy.

Admitted on 22.2.42. as a case of Sero-negative primary syphilis

Before the onset of jaundice he received 5.55 gm. Neokharsivan and 3.5 gm bismuth.

Jaundice developed 27 days after the second injection of the second course and within 133 days of the beginning of treatment. The icterus was mild. The icteric index was 42. The duration was 17 days.

Instructions about a low fat dietary regime were given.

Anti-syphilitic treatment was resumed with Acetylarsan and bismuth 39 days after the disappearance of the jaundice. Stabilarsan was introduced in the following month. Progress was satisfactory until he defaulted six months later.

Case No. D.6971. Age 40. Cleaner.

Admitted on 25.2.42. as a case of Tertiary syphilis.

Anti-syphilitic treatment prior to the onset of jaundice consisted of 3.15 gm trivalent arsenic (Stabilarsan, Novarsenobillon), 51 c.c. Acetylarsan and 4.8 gm. bismuth.

The jaundice developed about 14 days after the tenth injection of the second course and within 163 days of the beginning of treatment. The jaundice had been present for two weeks before he reported. Treatment had been given by his own doctor. There was still a slight icteric tinge, the urine contained a trace of bile and the icteric index was 72. The total duration was 28 days.

He was advised to continue with a low fat diet and was given injections of sodium thiosulphate.

Bismuth injections were resumed 21 days after the disappearance of jaundice. He later received Acetylarsan and Neokharsivan within a few weeks. Progress was satisfactory.

Case No. D.6981. Age 43. Rock worker.

Admitted on 28.2.42. as a case of Sero-positive primary syphilis.

Prior to jaundice he received 4.8 gm arsenic (Novarsenobillon and Neokharsivan) and 3.0 gm bismuth.

Icterus appeared 19 days after the second injection of the second course and within 107 days of the commencement of therapy. The onset of jaundice was accompanied by an extensive erythema, the urine contained bile and the icteric index was 87 (later 143), Dyspepsia and "dark urine" were present for about a week before the onset. Admission to the ward was refused. The duration of icterus was 60 days.

He was instructed about taking a low fat diet. Vitamen C and four intravenous infusions (800 cc) of glucose solution were given. 300 cc of blood were withdrawn by venepuncture at the onset as part of the treatment for the erythema.

Bismuth therapy was resumed 8 days after the disappearance of icterus and Acetylarsan was given after seven weeks, being succeeded by Stabilarsan (I.M.) on the next course. Progress was satisfactory and he was discharged in 1944.

Case No. D.7004. Age 57. Labourer.

Admitted on 5.3.42. as a case of Aortic incompetence.

Prior to jaundice he was given 25 c.c. Acetylarsan and 2.35 gm. bismuth.

The jaundice developed 9 days after the second injection of the second course and within 92days of the beginning of treatment. The jaundice was mild, the urine contained bile and a trace of albumin, and within three days the icteric index was 46 (later 95). During the three days preceding onset he complained of epigastric pains. The disease ran a relatively mild, but prolonged course, the duration being 73 days.

He received instructions about diet and was given sodium thiosulphate and four 800 c.c. intravenous infusions of 20% glucose solution.
Anti-syphilitic treatment was resumed with bismuth 21 days after the disappearance of icterus. Colloidal mercury was given during the second post-icteric course and Acetylarsan was introduced about one year later. He progressed favourably, but died in 1944, (cause not recorded).

Case No. D. 7066. Age 43. Mill worker.

Admitted on 19.3.42. as a case of Latent syphilis.

Treatment prior to the onset of jaundice consisted of 3.9 gm. Neokharsivan and 2.4 gm bismuth.

Icterus appeared 22 days after the eighth injection of the first course and within 116 days of the commencement of therapy. The jaundice was mild and the icteric index was 42 (later 83). The teeth were very bad. Duration: 29 days.

Diet was advised and sodium thiosulphate was given by injection.

Before anti-syphilitic treatment was resumed, jaundice developed again 24 days after the end of the first attack. The icteric index was 143 and the urine contained bile. This attack ran a fairly mild but prolonged course, the duration being 98 days.

Anti-syphilitic therapy was resumed 61 days before the end of this second attack. Bismuth was given. He defaulted after receiving one course of treatment but reported again four months later when Acetylarsan and later Novarsenobillon were given. Progress was satisfactory.

Case No. D. 7097. Age 26. Seaman.

Admitted on 24.3.42. as a case of Secondary syphilis.

Prior to the onset of jaundice he was given 1.95 gm Novarsenobillon and 1.2 gm bismuth.

Icterus appeared 7 days after the seventh injection of the first course and within 32 days of the beginning of treatment. Two weeks before the onset he had a "cold". At first icterus of the conjunctivae only was present, but became generalised and was accompanied by herpes zoster. Bile was found in the urine and the icteric index was 45 (later 115). He was admitted to the ward for 11 days and the duration of jaundice was 33 days.

He was given a low fat diet and sodium thiosulphate.

Four days after the jaundice had cleared, relapse occurred. Bile was present in the urine and the icteric index was 133. The duration was 33 days. Bismuth therapy was resumed but a toxic erythema occurred and a second relapse of severe jaundice developed a month after the first relapse. Bile was in the urine and the icteric index was 83 (later 125). Duration was 19 days. He was admitted to the ward for rest in bed, diet and intravenous infusions of glucose solution.

Bismuth and Acetylarsan were given shortly afterwards but a third attack of icterus occurred about one year after the second relapse. The urine contained bile and the icteric index was 59. The duration of this last attack was 16 days during which time he was treated as an in-patient. Two months later anti-syphilitic treatment was resumed with colloidal mercury, followed four months later by bismuth. No more arsenic was given and he progressed satisfactorily. No history of alcohol was obtained from this patient.

Case No. D 7137. Age 26. Labourer.

Admitted on 31.3.42. as a case of Sero-positive primary syphilis.

Anti-syphilitic therapy prior to the onset of jaundice was comprised of 3.9 gm Neokharsivan and 2.2 gm bismuth.

The jaundice developed 70 days after the eighth injection of the first course and within 125 days of the beginning of treatment. The urine contained bile and the icteric index was 71 (later 250). He was admitted to the ward for 5 days and the total duration of the jaundice was 61 days. Shortly after leaving the ward (at his own request) there was an exacerbation of the jaundice and he was readmitted for 22 days.

He was put on diet. Mist. Jaund. Co., and intravenous glucose "drips" were given.

He progressed favourably but was transferred before anti-syphilitic treatment could be resumed.

Case No. D 7172. Age 27. Plumber.

Admitted on 6.4.42. as a case of Sero-positive primary syphilis.

Prior to jaundice he received 7.3 gm arsenic (Novarsenobillon, Neokharsivan) and 4.4 gm bismuth.

The jaundice developed 35 days after the seventh injection of the second course and within 162 days of the beginning of treatment. The onset was accompanied by an inflammation of the throat (streptococcal) and nausea. The urine contained bile and the icteric index was 56. Stiffness between the shoulders occurred one week before the onset. The duration of jaundice was 21 days.

He was given a diet sheet and Mist. Jaund. Co., and intravenous injections of 20 cc. 20% glucose were prescribed.

Anti-syphilitic treatment was resumed with bismuth 7 days before the end of the attack. Acetylarsan was given later and he progressed favourably until transferred to the Army in 1943.

Case No. D 7293. Age 24. Miner.

Admitted on 24.4.42. as a case of Sero-positive primary syphilis.

Treatment before jaundice was composed of 3.9 gm Novarsenobillon and 2.1 gm bismuth.

The jaundice appeared 8 days after the thirteenth injection of the first course and within 109 days of the commencement of therapy. The urine contained bile and the icteric index was 67. He was admitted to the ward for 2 days. A trace of bile was found in the urine three weeks before the onset. He had several bad teeth. The duration of the attack was 24 days.

He was given a low fat diet, saline purgatives, Mist. Jaund. Co., and one intravenous infusion of 800 c.c. 20% glucose solution.

Immediately the jaundice disappeared bismuth injections were restarted. Stabilarsan was given five months later. Progress was satisfactory until he defaulted a month later.

Case No. D. 7248. Age 33. Gun maker.

Admitted on 16.4.42. as a case of Sero-negative primary syphilis.

Prior to jaundice he received 8.25 gm. Neokharsivan and 5.4 gm bismuth.

Icterus appeared 7 days after the ninth injection of the second course and within 151 days of the beginning of treatment. A history of alcohol was obtained. The onset was accompanied by dyspepsia. The urine contained bile and the icteric index rose to 95. The duration was 32 days.

He was advised about a low fat dietary regime and was given six intravenous infusions of glucose solution.

Bismuth therapy was resumed 13 days after the disappearance of jaundice and Acetylarsan was introduced within two months followed by Stabilarsan in three weeks. He progressed satisfactorily and was discharged in 1944.

Case No. D. 7296. Age 37. Shop assistant.

Admitted on 25.4.42. as a case of Sero-negative primary syphilis.

Anti-syphilitic treatment prior to jaundice consisted of 1.35 gm. Novarsenobillon, 1 c.c. Acetylarsan and 0.1 gm bismuth (only one injection of bismuth was given at the beginning as the patient had albuminuria.)

Icterus appeared 5 days after the fifth injection of the first course and within 25 of the beginning of treatment. Bile was found in the urine and the icteric index was 31 (later 56). The duration was 19 days.

He was sent to his own doctor for treatment.

As soon as the jaundice disappeared anti-syphilitic treatment was resumed with bismuth and Acetylarsan was introduced two weeks later. After a month he received Stabilarsan and Neokharsivan.

Further progress was satisfactory, but he defaulted in October, 1942.

Case No. D. 7326. Age 34. Excavator driver.
Admitted on 30.4.42. as a case of Secondary syphilis.

Prior to the development of icterus he received 1.5 gm Novarsenobillon and 0.7 gm bismuth.

The jaundice appeared 170 days after the fifth injection of the first course and within 183 days of the beginning of treatment (between the last injection and onset of jaundice he was away from the clinic but apparently did not receive treatment elsewhere). The attack was moderately severe, the urine contained bile and the icteric index was 182. The duration was 35 days. There were some bad teeth.

He was put on diet and received three intravenous "drips" of glucose solution.

Bismuth treatment was resumed 20 days after the disappearance of icterus and Acetylarsan was given one month later. Progress was satisfactory until he left for the Army one month later.

Case No. D 7358. Age 51. Mill worker.

Admitted on 7.5.42. as a case of Secondary syphilis.

Prior to the onset of jaundice he received 3.5 gm Novarsenobillon, 9 c.c. Acetylarsan and 3.8 gm bismuth.

The icterus appeared 9 days after the sixth injection of the second course and within 133 days of the beginning of treatment. The urine contained bile and the icteric index was 80. He was admitted to the ward for 5 days. During the two days immediately preceding the onset he had experienced nausea and weakness. The duration was 9 days.

He was put on diet and two intravenous infusions (1,200 c.c.) of glucose solution were given.

One week before the end of jaundice bismuth therapy was resumed and Acetylarsan was introduced three months later. Within one month Stabilarsan was given and further progress was satisfactory.

Case No. D 7394. Age 33. Bricklayer.

Admitted on 13.5.42. as a case of Secondary syphilis.

Treatment before the onset of the jaundice consisted of 4.65 gm Novarsenobillon and 3.8 gm bismuth.

The jaundice appeared 16 days after the thirteenth (last) injection of the first course and within 68 days of the beginning of treatment. The jaundice was mild and the urine contained bile. The icteric index rose to 31. He was admitted to the ward for 4 days. There was a history of alcohol and he suffered from sycosis barbae. Three days before the onset he experienced a "severe chill" and noticed that the urine was "dark". The duration was 25 days.

He was put on diet and Mist. Jaund. Co. was given.

Bismuth therapy was resumed 2 weeks before the end of the attack of jaundice.

Twentyeight days after this first attack he reported in a jaundiced state again. The urine contained bile and the icteric index was 67 (later 91). He was admitted for 5 days and the duration of the attack was 41 days. Nine days after the jaundice had disappeared anti-syphilitic treatment was again resumed with bismuth. He later received Acetylarsan and Neokharsivan and progressed favourably until he defaulted in 1944.

Case No. D 7399. Age 60. Labourer.

Admitted on 14.5.42. as a case of Tertiary syphilis.

Prior to jaundice he received 44 c.c. Acetylarsan 0.45 gm. Stabilarsan and 3.9 gm bismuth.

Jaundice developed 21 days after the fourth injection of the second course and within 184 days of the beginning of treatment. About one month before the onset he complained of generalized muscular pains for one week. When he eventually reported he stated that he had been 5 weeks in bed with jaundice. On examination there was no clinical jaundice and no bile in the urine. The icteric index was 13. He had had several bad teeth removed three months previously.

Shortly after the end of jaundice anti-syphilitic treatment was resumed with bismuth and Acetylarsan was introduced one month afterwards.

Further progress was satisfactory.

Case No. D. 7404. Age 29. Corporal, Army.

Admitted on 17.6.39. as a case of Secondary syphilis.

Treatment before the onset of jaundice comprised 5.15 gm. Stabilarsan and 3.6 gm. bismuth.

The jaundice appeared 6 days after the eleventh (last injection of the second course and within 69 days of the beginning of treatment. The urine contained bile, the icteric index was 70 (later 90) and the Van den Bergh reaction was direct, biphasic. The disease ran a relatively mild, but prolonged course, the duration being 50 days.

He was issued with a diet sheet and received injections of Redoxon and Calciostab.

Bismuth therapy was resumed 7 days after the clearance of icterus and Stabilarsan was introduced three months afterwards. The progress was satisfactory but he defaulted from treatment in 1941.

Case No. D. 7401. Age: not recorded. Rigger'smate.

Admitted on 14.5.42. as a case of Sero-positive primary syphilis.

Treatment before onset of jaundice consisted of 4.95 gm arsenic (Novarsenobillon, Neokharsivan) and 3.0 gm bismuth.

The jaundice appeared 15 days after the twelfth (last)injection of the first course and within 82 days of the commencement of therapy. A history of alcoholism a few days prior to onset was obtained. He had had treatment for the jaundice by the time he reported but there still was an icteric tinge present and the urine contained a trace of bile. The duration of the disease was 22 days.

Nineteen days after the disappearance of jaundice Novarsenobillon and bismuth were given but bile appeared again in the urine and there was a relapse of the jaundice 35 days after the last attack. He was sent to the naval sick bay for treatment. The duration was 19 days.

As soon as the second attack of jaundice had ended bismuth treatment was restarted. He defaulted after receiving one injection.

Case No. D.7452. Age 34. Miner.

Admitted on 23.5.45. as a case of Sero-positive primary syphilis.

Treatment prior to jaundice consisted of 6.0 gm Novarsenobillon and 3.6 gm bismuth.

Icterus appeared two weeks after the tenth injection of the first course and within 115 days of the beginning of treatment. About three months before the onset he had complained of muscular pains. Prior to reporting to the clinic he had been attending his own doctor for treatment of the jaundice. There was a slight icteric tinge still present but no bile was detected in the urine. The duration was 20 days.

He was advised to continue with a low fat diet.

Six days before the jaundice disappeared bismuth treatment was restarted and Acetylarsan was given within one month. Then he developed a second attack of icterus 32 days after the previous one. The icteric index was 77 and the urine contained bile. The disease lasted 11 days. He received injections of sodium thiosulphate.

Bismuth therapy was resumed again 28 days after the disappearance of jaundice. He later received Acetylarsan and Stabilarsan and progressed favourably.

Case No. D 7455. Age 27. Stoker.

Admitted on 23.5.42. as a case of Seronegative primary syphilis.

Prior to jaundice he was given 5.85 gm. Novarsenobillon and 2.2 gm bismuth. Treatment had been started elsewhere.

Icterus developed 7 days after the second injection of the second course and within 123 days of the beginning of treatment. A history of alcohol was obtained. Onset was accompanied by dyspepsia. The urine contained bile and the icteric index was 98. He was admitted to a naval hospital for eight weeks.

Bismuth treatment was resumed as soon as the jaundice disappeared. Acetylarsan and Novarsenobillon were given later. Progress was good but he defaulted in 1943.

Case No. D. 7467. Age 17½. Labourer.

Admitted on 26.5.42. as a case of Sero-positive primary syphilis.

Prior to jaundice he received 8.1 gm arsenic (Novarsenobillon, Neokharsivan) and 5.0 gm bismuth.

Icterus appeared 7 days after the eighth injection of the second course and within 156 days of the beginning of treatment. The urine contained no bile at first. The icteric index rose to 56. One month before onset he had stiffness of the joints. The duration was 11 days.

A diet sheet was issued and two intravenous glucose "drips" (1,200 c.c.) were given.

Bismuth therapy was resumed 21 days after the end of the attack and he later received Acetylarsan and Stabilarsan.

Progress was satisfactory.

Case No. D.7499. Age 31. Motor driver.

Admitted on 30.5.42. as a case of Congenital syphilis.

Prior to onset of jaundice he was given 14.95 gm arsenic (Novarsenobillon, Neokharsivan) and 6.1 gm bismuth. Treatment had started before he came to the clinic.

Jaundice developed 13 days after the fourth injection of the fifth course and within one and a half years of the beginning of treatment. The jaundice was mild and the urine contained a trace of bile. The icteric index rose to 53. The duration was 14 days.

Diet and sodium thiosulphate were prescribed.

As soon as icterus cleared away bismuth injections were recommenced. He later received Acetylarsan and Stabilarsan. Further progress was satisfactory.

Case No. D.7501. Age 55. Plumber.

Admitted on 30.5.42. as a case of Tertiary syphilis.

Anti-syphilitic treatment before the onset of jaundice consisted of 6.15 gm trivalent arsenic (Stabilarsan, Novarsenobillon) 3 c.c. Acetylarsan and 5.0 gm. bismuth.

Icterus appeared 11 days after the fourth injection of the second course and within 215 days of the beginning of treatment. The jaundice was severe and the liver was two to three finger breadths below the costal margin. The urine was loaded with bile. He refused admission at first but accepted four days later. He received a special diet, three 1,200 c.c. intravenous infusions of 20% glucose, Mist. Jaund. Co., and Kapilon. Petechial haemorrhages on the forearm and irritation of the skin of the abdominal wall occurred. He improved a little and then the condition began to deteriorate.

He became drowsy and more intensely jaundiced. Coma set in on the following day and he died 17 days after the onset of jaundice. He was vaccinated against smallpox one month prior to onset of jaundice.

A post-mortem examination was conducted and the main findings were:-

Cirrhosis of the liver complicated by acute diffuse necrosis.
Enlargement and congestion of the spleen.
Dilatation of the oesophageal veins.
Congestion and oedema of the lungs.
Haemorrhage into the extraperitoneal tissues, peritoneal sac and lungs.
Toxic changes in all organs and generalized bile-staining.

Case No. D.7535. Age 30. Motor driver.

Admitted on 6.6.42. as a case of Sero-negative primary syphilis.

The treatment received before the onset of jaundice consisted of 5.4 gm arsenic (Novarsenobillon, Neokharsivan) and 2.65 gm bismuth.

The jaundice developed 16 days after the first injection of the second course and within 164 days of the beginning of treatment. The conjunctivae were tinged, the urine contained a little bile and the icteric index was 59. There was a history of alcohol. Two months before onset he had an arsenical dermatitis. The teeth were in a poor condition. The duration was 21 days.

He was instructed about a low fat dietary regime and received Vitamen C and one intravenous infusion of 20% glucose solution.

Anti-syphilitic treatment was resumed with colloidal mercury immediately the jaundice had disappeared. He later received bismuth, Acetylarsan and then Stabilarsan. Progress was satisfactory.

Case No. D.7580. Age 42. Surface-man.

Admitted on 15.6.42. as a case of Secondary syphilis.

Prior to jaundice he received 4.05 gm. arsenic (Novarsenobillon, Neokharsivan) and 3.2 gm bismuth.

The jaundice developed 28 days after the thirteenth (last) injection of the first course and within 95 days of the beginning of treatment. The urine contained bile and the icteric index was 37 (later 100). Duration was 42 days. He lost 10 lbs. in weight.

He was advised about diet. Two intravenous infusions of glucose solution and sodium thiosulphate were given.

Owing to default after the end of jaundice anti-syphilitic treatment was not resumed for 95 days. Acetylarsan and bismuth were given and later Stabilarsan.

Further progress was satisfactory.

Case No. D.7635. Age 39. Miner.

Admitted on 26.6.42. as a case of Secondary syphilis.

Anti-syphilitic treatment prior to jaundice consisted of 4.65 gm. arsenic (Novarsenobillon, Neokharsivan) and 3.0 gm. bismuth.

Icterus appeared 22 days after the eleventh (last) injection of the first course and within 85 days of the commencement of therapy. The onset was accompanied by abdominal pains. Admission was refused at first, but the jaundice deepened and he was admitted to the ward for 9 days. The urine contained bile and the icteric index was 67 (later 111). Duration was 27 days.

He was given special diet and received two intravenous infusions (each 2,400 c.c.) of 20% glucose.

Bismuth therapy was restarted within one week of the end of the attack. He later received Acetylarsan and Stabilarsan. Further progress was satisfactory and he was discharged in 1945.

Case No. D.7653. Age 27. Seaman.

Admitted on 30.6.42. as a case of Sero-positive primary syphilis

The dosages of anti-syphilitic drugs given before jaundice developed were 4.95 gm Novarsenobillon and 3.3 gm bismuth.

Icterus appeared about 15 days after the tenth injection of the first course and within 82 days of the beginning of treatment. The jaundice had been present for some days before he reported but icterus was still present. He had some bad teeth. No bile was found in the urine and the icteric index was 40.

He was instructed about diet and yeast tablets were prescribed. The duration was 48 days approximately.

Bismuth injections were started again 8 days after the disappearance of jaundice. He received Evarsen about one month later. Further progress was satisfactory but he defaulted in 1943.

Case No. D.7698. Age 44. Labourer.

Admitted on 17.6.42. as a case of Sero-negative primary syphilis

Prior to jaundice he received 3.6 gm. Novarsenobillon and 2.4 gm bismuth.

Jaundice appeared 31 days after the eleventh (last) injection of the first course and within five months of the beginning of treatment. Bile was present in the urine, and the icteric index was 71 (later 118) Admission to the ward was refused, but he later came in for 9 days. The duration was 39 days. One week before the onset he noted that his urine was "dark". He was instructed as to diet. Two intravenous glucose "drips" and vitamen C were given.

Anti-syphilitic treatment was resumed with bismuth 45 days after the disappearance of icterus. Acetylarsan was given one month afterwards. Further progress was good until he defaulted in 1943.

Case No. D.7709. Age 29. Labourer.
Admitted on 29.6.42. as a case of Latent syphilis.

The dosages of drugs before the onset of jaundice were 5.55 gm. Novarsenobillon and 3.5 gm. bismuth.

Icterus developed 3 days after the fifth injection of the second course and within 132 days of the beginning of treatment. Bile was found in the urine and the icteric index was 77. He had two bad teeth and denied taking alcohol for six months. The duration was 35 days.

He was advised about diet and was given Vitamen C and two intravenous infusions of glucose solution.

Nine days after the disappearance of jaundice bismuth treatment was resumed but jaundice developed again 28 days after the previous attack. The urine contained bile and the icteric index was 66 (later91). The liver was two finger breadth's below the costal margin. He was admitted to hospital for 16 days and the total duration of jaundice was 36 days. He was put on diet; glucose orally and Kapilon were given.

Bismuth injections were resumed again 20 days after the end of jaundice. He later received Acetylarsan and progressed satisfactorily.

Case No. D. 7731. Age 47. Miner.

Admitted on 11.7.42. as a case of Sero-positive primary syphilis.

Dosages prior to jaundice were 4.95 gm. arsenic (Novarsenobillon, Neokharsivan) and 2.9 gm bismuth.

The jaundice developed 37 days after the tenth injection of the first course and within 100 days of the beginning of treatment. The jaundice was moderately severe, the urine contained bile and the icteric index was 56 (later 125). He was admitted to the ward for 21 days. Just before onset he complained of gastric upset. The duration was 54 days. The specific agglutination test for Weil's disease was negative on two occasions.

He was put on diet. Saline purgatives, Mist. Jaund. Co., and three intravenous glucose "drips" were given.

Immediately icterus disappeared bismuth injections were resumed. He later received Acetylarsan and Stabilarsan and progressed favourably.

Case No. D.7830. Age 31. Miner.

Admitted on 28.7.42. as a case of Secondary syphilis.

Anti-syphilitic treatment before the appearance of jaundice consisted of 6.0 gm Noekharsivan and 2.5 gm bismuth.

Icterus developed 21 days after the eleventh (last) injection of the first course and within 86 days of the beginning of treatment. Onset was accompanied by nausea and stiffness in the lumbar muscles. Bile was present in the urine and the icteric index was 77. Before onset he had epigastric pains and diarrhoea. He had pyorrhoea associated with several decayed teeth. Duration was 51 days.

He was advised about diet and received sodium thiosulphate.

Bismuth injections were resumed 7 days after the end of jaundice. Progress was satisfactory until he defaulted a few weeks later.

Case No. D.7905. Age 33. Manager.

Admitted on 6.8.42. as a case of Sero-negative primary syphilis

Before the onset of jaundice he was given 4.05 gm Novarsenobillon and 2.0 gm bismuth.

Jaundice developed 10 days after the seventh injection of the first course and within 64 days of the beginning of treatment. During the five days preceding onset he complained of epigastric pains, diarrhoea and vomiting. On reporting the urine was found to contain bile and the icteric index was 69. He received treatment from his own doctor. The duration was 25 days. He lost 9 lb. in weight. Alcohol was denied.

Before anti-syphilitic treatment was resumed jaundice appeared again 18 days after the first attack. Admission was refused. The jaundice was marked, the urine contained much bile and the icteric index was 100 (later 117). The duration was 58 days.

Bismuth injections were commenced 27 days before the final clearance of the jaundice. Acetylarsan and Stabilarsan were given later. Further progress was satisfactory until he defaulted in 1944.

Case No. D.7973. Age 39. Brewery worker.

Admitted on 17.8.42. as a case of G.P.I.

Prior to jaundice he was given 13 gm Tryparsamide and 1.4 gm bismuth.

Icterus developed 82 days after the eleventh (last) injection of the first course and within 145 days of the beginning of treatment. The urine contained bile and the icteric index was 36. The duration was 37 days.

Diet was advised and injections of 20 cc. - 40 cc. of glucose solution were given.

Progress was good but he defaulted one month later before anti-syphilitic treatment was resumed.

Case No. D.8000. Age 27. Labourer.

Admitted on 21.8.42. as a case of Congenital syphilis.

Anti-syphilitic treatment before jaundice was composed of 32 c.c. acetylarsan, 3.45 gm. Stabilarsan and 1.1 gm. bismuth.

The jaundice developed 29 days after the twelfth (last) injection of the second course and within 220 days of the beginning of treatment. The urine contained bile and the icteric index was 42 (later 105). The onset was mild but the condition worsened and he was admitted to the ward afterwards. The duration was 59 days.

He was put on diet. Saline purgatives, Mist. Jaund. Co., and two glucose "drips" were given.

Bismuth injections were resumed 31 days after the disappearance of jaundice. Acetylarsan and Evarsen were given later and he progressed favourably.

Case No. D 8041. Age 66. Baker.

Admitted on 27.8.42. as a case of Tertiary syphilis.

Prior to jaundice he was given 25 c.c. Acetylarsan and 3.4 gm bismuth.

Icterus developed 63 days after the thirteenth (last) injection of the second course and within 244 days of the commencement of treatment. The jaundice was mild, the urine contained bile and the icteric index rose to 125. The disease lasted 42 days.

He was put on diet. Four intravenous infusions of glucose solution, glucose orally and Kapilon were given.

He was then given 10 c.c. colloidal iodine weekly and, before active anti-syphilitic treatment could be resumed, jaundice reappeared 66 days after the previous attack. The icteric index was 29. Radiological examination revealed a poorly functioning gall-bladder. He received treatment in another hospital.

Anti-syphilitic treatment was resumed with Spirobismol three months later and progress was satisfactory.

Case No. D 8055. Age 47. Seaman

Admitted on 28.8.42. as a case of Secondary syphilis.

Prior to jaundice he received an "intensive" (eight-day) course of Mapharside in combination with two sessions of hyperpyrexia (T.A.B. vaccine). Total dosage: 0.72 gm.

The jaundice developed 90 days after the sixth (and last) injection of the course and within 98 days of the beginning of treatment. The jaundice had been present for eight days prior to reporting. The urine contained bile, the icteric index rose to 133 and the liver was two finger breadth's below the costal margin. He was admitted to the ward for 15 days. The duration of the attack was 32 days.

He was put on the special jaundice diet.

Sodium thiosulphate. Vitamen C and three intravenous infusions of glucose solution were given.

He progressed favourably.

Case No. D. 8071. Age 49. Miner.

Admitted on 1.9.42. as a case of Secondary syphilis.

Prior to jaundice he received an "intensive" (eight-day) course of treatment with Mapharside in combination with two sessions of hyperpyrexial treatment. Total dosage: 0.72 gm.

The jaundice developed about 53 days after the sixth (last) injection of the course and within about 60 days of the commencement of treatment. The jaundice was treated outside and lasted for 10 weeks. A history of alcohol was obtained.

Further progress was satisfactory.

Case No. D.8093. Age 21. Stoker.

Admitted on 3.9.42. as a case of Secondary syphilis.

He received an "intensive" (eight-day) course of treatment with Mapharside combined with two sessions of hyperpyrexia (Dmelcos vaccine). Total dosage: 0.72 gm. arsenic.

The jaundice developed 57 days after the completion of this course. There was a history of alcohol. The jaundice had been present for three days when he reported. The urine contained bile, the icteric index was 36 and the van den Bergh reaction was biphasic. He was admitted to the ward and the condition remained static for three days. Special diet and Mist. Jaund. Co. were prescribed. On the fourth day he began to act strangely and get up out of bed against orders. On the following day he was inert and unresponsive to questions. There was no liver enlargement. The icteric index was 83. 2,000 c.c. 20% glucose solution were given intravenously. On the following day coma set in and he developed a divergent strabismus. The blood pressure fell to 90/50 and the temperature rose to 101.8°F. 2,000 c.c. of glucose solution were given intravenously. In the afternoon he was catheterised but no crystals of leucin or tyrosin were found. Cheyne-Stokes respiration and weak and irregular pulse developed. Digoxin (1 mgm in 10 c.c. sterile water intravenously) and euphyllin (0.5 gm. intramuscularly) were administered but he died one and a half hours later.

A post-mortem examination was conducted and the main findings were:-

(1) Acute yellow atrophy of the liver.

(2) Haemorrhages into the pericardium, endocardium, both lungs and spleen.

(3) Dilatation of the heart;

(4) Oedema of the lungs;

(5) Cloudy swelling of the myocardium and kidneys;

(6) Bile-staining of the leptomeninges and cerebro-spinal fluid.

Case No. D.8102. Age 23. Caulker.

Admitted on 5.9.42. as a case of Secondary syphilis.

Prior to the development of jaundice he received an "intensive" (eight-day) course of Mapharside combined with two sessions of hyperpyrexial treatment (Dmelcos vaccine) Total dosage was 0.72 gm.

The jaundice developed about 32 days after the end of the course and within 40 days of the commencement of treatment. The jaundice was treated outside and the duration was uncertain.

Further progress was satisfactory till he defaulted in March 1943.

Case No. D 8148. Age 37. Writer, Royal Navy

Admitted on 15.10.42. as a case of Sero-negative primary syphilis

Before icterus appeared he received 7.65 gm Novarsenobillon and 3.5 gm. bismuth. Treatment was started before he came to the clinic.

Jaundice developed 9 days after the tenth injection of the second course and within 63 days of the beginning of treatment. The jaundice was slight, the urine contained bile and the icteric index was 25. The duration was uncertain, due to a temporary default after the first visit following jaundice.

He was advised about diet and received sodium thiosulphate.

He was given Stabilarsan and bismuth some five months later and jaundice appeared again about 6 months after the previous attack. Treatment was given outside and the duration was uncertain. He was given Novarsenobillon and bismuth afterwards and progressed satisfactorily.

Case No. D 8176. Age 50. Waiter.

Admitted on 18.9.42. as a case of Secondary syphilis.

He received an "intensive" course of Mapharside combined with hyperpyrexial treatment. Total dosage 0.66 gm.

Icterus appeared about three months after this course. When he reported he stated that he had been 5 months in hospital with jaundice and had developed ascites which was "tapped". There was still an icteric tinge present, but no bile was found in the urine.

He was advised to continue on a low fat dietary regime.

Further progress was satisfactory.

Case No. D. 8215. Age 43. Bus driver.

Admitted on 25.9.42. as a case of Tabes dorsalis.

Anti-syphilitic treatment before jaundice developed consisted of 26 c.c. Acetylarsan, 7 gm. Tryparsamide and 2.3 gm bismuth.

The jaundice appeared 12 days after the fourteenth (last) injection of the first course and within 86 days of the commencement of therapy. The onset was accompanied by "pains down the legs". The urine contained bile and the icteric index was 40. During the week preceding the onset of the attack he vomited and was kept off his work because of influenza. The duration of jaundice was 16 days.

He was issued with a jaundice diet sheet. Sodium thiosulphate, Vitamen C and two intravenous infusions of glucose were given.

Bismuth injections were resumed 7 days after the jaundice cleared away and Acetylarsan was introduced one month later. Further progress was uneventful.

Case No. D 8221. Age 22. Unemployed.

Admitted on 25.9.42. as a case of Congenital syphilis.

Before the appearance of jaundice he was given 16 c.c. Acetylarsan 0.75 gm. Stabilarsan and 2.8 gm bismuth.

Icterus developed 7 days after the eleventh (last) injection of the first course and within 84 days of the beginning of treatment. The jaundice was mild, the urine contained a little bile and the icteric index rose to 83. He was admitted to the ward for 8 days and the total duration was 23 days.

Special diet, Vitamen, C, sodium thiosulphate and 20 c.c. injections of 20% glucose were prescribed.

Immediately the jaundice disappeared bismuth injections were resumed and Acetylarsan was introduced one month later and succeeded by Stabilarsan within three months. He progressed favourably but defaulted in July, 1943.

Case No. D.8226. Age 25. Motor driver.

Admitted on 28.9.42. as a case of Sero-positive primary syphilis.

Treatment had been started before he came to the clinic. This was continued and the total dosages before jaundice developed were 5.3 gm. Novarsenobillon and 4.3 gm. bismuth.

Icterus appeared about 2 days after the end of the first course and within approximately three months of the beginning of treatment. The only prodromal feature was a "throbbing in the back of the head" about two weeks before the onset of jaundice. When he reported for examination the jaundice had been present for 3 weeks and treatment had been given by his own doctor. There was still a trace of jaundice, the urine contained a little bile and the icteric index was 83. The duration was 40 days.

He was advised to continue on a low fat diet and was given two intravenous injections of 20 c.c. 20% glucose solution.

Anti-syphilitic treatment was resumed with bismuth 13 days after the end of the attack. Progress was favourable and he was transferred to another clinic.

Case No. D 8241. Age 32. Miner.

Admitted on 30.9.42. as a case of Sero-positive primary syphilis.

Before jaundice developed he was given 4.25 gm Evarsen and 2.8 gm bismuth.

Icterus appeared 21 days after the eleventh (last) injection of the first course and 84 days from the beginning of treatment. He was moderately severely jaundiced and the icteric index was 77. Treatment was given by his own doctor. The duration was 21 days.

Immediately the attack was ended bismuth injections were resumed but he defaulted from treatment for two years. On his return he stated he had just had a further attack of jaundice. There was a trace of jaundice still present, no bile was detected in the urine and the icteric index was 45. He was given Vitamen C (100 mgm) in 20 c.c. 20% glucose solution. The duration was 21 days.

Bismuth injections were resumed as soon as the jaundice cleared up and Acetylarsan was introduced one month afterwards. Two months after this Stabil-arsan was given and succeeded by Neokharsivan on the next course. Further progress was favourable.

Case No. D. 8262. Age 40. Commercial Traveller.

Admitted on 2.10.42. as a case of Sero-positive primary syphilis.

Before jaundice developed he received 6.3 gm arsenic (Novarsenobillon and Neokharsivan) and 5.3 gm bismuth.

The jaundice developed 3 days after the tenth injection of the second course and within 173 days of the beginning of treatment. The onset was accompanied by anorexia. A trace of bile was present in the urine and the icteric index rose to 48. A month after the onset of the jaundice bismuth therapy was resumed but was stopped after three injections as an exacerbation of the icterus occurred. The total duration was 42 days.

He received instructions about diet. Five intravenous infusions of glucose solution were administered.

Fifteen days after the end of the attack 1 c.c. colloidal mercury (I.M.) was given. Then a second attack of jaundice occurred 47 days after the previous attack. The prodromal features were anorexia and "dark urine". The duration of the attack was 50 days approximately.

Anti-syphilitic treatment was resumed 26 days after the disappearance of jaundice with bismuth only. Further progress was uneventful.

Case No. D.8265. Age 34. Baker.

Admitted on 2.10. 42. as a case of Latent syphilis.

Prior to jaundice he received 3.55 gm. Novarsenobillon and 2.9 gm bismuth.

Icterus appeared 14 days after the eleventh (and last) injection of the first course and 98 days from the beginning of treatment. The only prodromal symptom was pain in the knees for about two weeks. The patient was moderately severely jaundiced. The urine contained bile and the icteric index was 100. The attack lasted 21 days. Admission to the ward was refused. There was a history of alcohol.

He was advised about diet. C (100 mgm) in 20 c.c 20% glucose solution was given twice. He also received 1,200 c.c. 20% glucose solution intravenously.

Immediately the jaundice had cleared up bismuth injections were restarted and Acetylarsan was introduced one month later and was succeeded by Stabilarsan in the next course. Progress was satisfactory and he was transferred in December, 1943.

Case No. D.8266. Age 57. Labourer.

Admitted on 2.10.42. as a case of Tertiary syphilis (leukoplakia).

Anti-syphilitic therapy prior to the onset of jaundice was composed of 16 cc. Acetylarsan, 3.0 gm trivalent arsenic (Stabilarsan, Novarsenobillon) and 5.2 gm bismuth.

The jaundice developed about one week after the tenth injection of the second course and within 216 days of the commencement of treatment. His doctor reported that he was treating the patient for severe jaundice. When the patient reported later a slight icteric tinge was still present, the urine did not contain bile and the icteric index was 28. The duration was 48 days approximately. A history of alcohol was obtained.

He was advised to continue with a low fat diet. Three intravenous injections of 20-40 c.c. 20% glucose solution were given.

Nine days after the disappearance of jaundice a course of colloidal mercury was started. This was repeated in the next course and he was given Bisantol four months after the attack. Further progress was uneventful.

Case No. D.8313. Age 42. Grocer.

Admitted on 14.10.42. as a case of Tertiary syphilis (gumma).

Prior to jaundice he was given 2.7 gm Neokharsivan, 7 c.c. Acetylarsan and 3.5 gm. bismuth.

The jaundice developed 7 days after the eighth injection of the second course and within 133 days of the beginning of treatment. The onset was preceded by heartburn for two days. Bile was found in the urine and the icteric index was 66 (later 167). Two months previously he stated that he had had a "mild" jaundice between two of the weekly injections, but no evidence of jaundice was found at that time. The attack lasted 35 days.

A low fat dietary regime was advised and Mist. Jaund. Co., was prescribed. He also received 1 c.c. Kapilon intra-muscularly, glucose orally and six injections of 40 c.c. 20% glucose solution.

Bismuth therapy was resumed 21 days after the disappearance of jaundice. The second post-icteric course consisted of colloidal mercury and Bisantol was substituted for this in the third course. Acetyo larsan was introduced in the fourth course and thereafter bismuth only was given. Further progress was satisfactory.

Case No. D.8322. Age 45. Miner.

Admitted on 13.10.42. as a case of Sero-positive primary syphilis.

He was given an "intensive" (eight-day) course of treatment with Mapharside combined with two sessions of hyperpyrexial treatment (T.A.B. vaccine) The dosage was 0.72 gm.

Icterus appeared approximately two months after this course. When he reported he stated that the jaundice had been present for eight days. A slight icteric tinge was still present. The attack lasted 24 days approximately.

Thirty-five days later he reported with a recurrence of jaundice and was admitted to the ward for 12 days. The icteric index was 59 and the urine contained bile. He was given special diet. Saline purgatives and Mist. Jaund. Co., were prescribed. Kapilon was given and he received a hot bath every evening. The attack lasted 24 days.

Further progress was uneventful.

Case No. D.8367. Age 38. Foundry worker.

Admitted on 20.10.42. as a case of Sero-positive primary syphilis.

He received an "intensive" course of Mapharside combined with two sessions of inductopyrexia. The dosage was 0.42 gm. No more was given as he developed a toxic dermatitis.

Jaundice appeared within 82 days of the end of the course. Three weeks before the onset he had stiffness in the feet and ten days before the onset he noticed that his urine was "dark". When he reported for examination the urine contained bile and the icteric index was 71 (later 95). Admission to the ward was refused.

He was advised about diet and received two intravenous infusions of glucose solution (each 1,200 c.c.), 20-40 c.c. intravenous injection of glucose solution, also Kapilon intramuscularly thrice weekly on five occasions. The duration of the attack was 24 days.

Case No. D.8433. Age 52. Cooper.

Admitted on 30.10.42. as a case of Syphilitic basal meningitis.

Prior to the onset of icterus he received 5 c.c. Acetylarsan, 45 gm. Tryparsamide and 2.3 gm. bismuth.

The jaundice developed 8 days after the second injection of the third course and within 162 days of the beginning of treatment. The onset of jaundice was accompanied by a feeling of marked generalised muscular stiffness (increased by rest). The icteric index was 23. Bile appeared in the urine after five days. He was admitted to the ward for 12 days. Marked oral sepsis was found. The duration of the attack was 19 days. The bleeding time was $1\frac{3}{4}$ minutes.

He was put on to a low fat diet and given one teaspoonful of yeast thrice daily.

Immediately the attack subsided injections of bismuth ethyl camphorate were started. Two months later Acetylarsan was given. A course of colloidal mercury followed this and Acetylarsan was introduced again later. Further progress was satisfactory.

Case No. D.8478. Age 31. Stoker.

Admitted on 4.11.42. as a case of Sero-positive primary syphilis.

Treatment was started before he came to the clinic. This was continued and the total dosages given before the development of jaundice were 0.68 gm Mapharside and 2.8 gm bismuth.

The jaundice appeared 3 days after the fifth injection of the second course and within 87 days of the commencement of therapy. A history of alcohol was obtained and his teeth were poor. Generalized muscular stiffness, especially marked about the shoulders was present for three weeks prior to onset. Bile was present in the urine. The icteric index was 28. He was sent to the naval sick bay for treatment. The attack lasted 37 days.

Anti-syphilitic therapy was resumed with bismuth 9 days after the disappearance of jaundice and Acetylarsan was introduced two weeks later. This was succeeded by Neokharsivan within two months. Progress was satisfactory but he defaulted in 1944.

Case No. D.8494. Age 36. Engineer.

Admitted on 8.11.42. as a case of Sero-negative primary syphilis.

An "intensive" course (eight-day) of treatment of Mapharside combined with two sessions of hyperpyrexia (T.A.B. vaccine) was given. Total dosage: 0.72 gm.

Icterus appeared 48 days after this course. The jaundice had been present for three days when he reported for examination. Bile was present in the urine and the icteric index was 57. He was admitted to the ward for 3 days.

A special diet was ordered and one 20 c.c. injection of 20% glucose solution was given. He defaulted for a time on leaving the ward and the duration of the attack was uncertain.

Case No. D.8501. Age 35. Mill worker.

Admitted on 10.11.42. as a case of Sero-negative primary syphilis.

Prior to the onset of jaundice he was given 5.25 gm. Evarsen and 2.9 gm. bismuth.

Icterus appeared 22 days after the eleventh (last) injection of the first course and 90 days from the beginning of treatment. The attack was treated by his own doctor. Duration of the disease was uncertain.

Approximately two months after the attack anti-syphilitic treatment was resumed with bismuth and followed just over three weeks later by Acetylarsan. Two months after this Neokharsivan was introduced without any ill effects. Further progress was satis-factory.

Case No. D.8502. Age 36. Unemployed.

Admitted on 10.11.42. as a case of Latent syphilis.

His treatment had been commenced before he came to the clinic. This was continued and he received 6.9 gm. arsenic (Novarsenobillon, Neokharsivan) and 5.3 gm. bismuth before jaundice developed.

Icterus appeared shortly after the completion of the second course and approximately five months after the commencement of therapy. When he reported he stated that he had had an attack of jaundice which lasted two weeks. Icterus was absent.

Shortly after the disappearance of jaundice anti-syphilitic treatment was resumed with bismuth. Acetylarsan was introduced within two months and was succeeded three weeks later by Neokharsivan. Further progress was satisfactory.

Case No. D.8510. Age 25. Engineman, Royal Navy.

Admitted on 11.11.42. as a case of Sero-negative primary syphilis.

Treatment had been started before he came to the clinic. This was continued and he received approximately 1.49 gm. arsenic (Novarsenobillon, Mapharside) and 0.9 gm. bismuth.

The icterus appeared 16 days after the sixth injection of the second course and approximately four months from the beginning of treatment. He was sent to the Naval sick-bay for treatment. The duration of the disease was 27 days. His teeth were poor, but no history of alcohol was obtained.

Immediately the jaundice had disappeared anti-syphilitic treatment was resumed with Bisantol and Acetylarsan was introduced three months later. This was succeeded by Stabilarsan one month later. Progress was satisfactory but he defaulted in November, 1943.

Case No. D.8542. Age 36. Leading cook, Royal Navy.

Admitted on 12.11.42. as a case of Tertiary syphilis (leukoplakia).

Prior to jaundice he received 14 c.c. Acetylarsan, 2.1 gm. trivalent arsenic (Stabilarsan, Neokharsivan) and 4.2 gm. bismuth.

Jaundice developed 21 days after the fourth injection of the second course and 195 days from the beginning of treatment. During the month preceding onset there were occasional complaints of stiffness in the knees and anorexia. Three days before the jaundice appeared he had epigastric pains. The onset was associated with generalized muscular stiffness. The urine contained bile and the icteric index was 111 (later 125). He was admitted to the ward for 21 days. The total duration of the attack was 50 days.

Diet was prescribed and he received veracolate (two tablets thrice daily).

Bismuth therapy was resumed 36 days after the disappearance of jaundice and Acetylarsan was introduced one month later. Eventually he was given Mapharside without ill effect.

Case No. D.8550. Age 37. Motor driver.

Admitted on 13.11.42. as a case of Sero-negative primary syphilis.

He received an "intensive" (eight-day) course of treatment with Mapharside in conjunction with two sessions of hyperpyrexia (T.A.B. vaccine).

Jaundice developed within 70 days of this course. When he reported he stated that the jaundice had already been present for 3 days. There was still an icteric tinge, the urine was found to contain bile and the icteric index was 71. The attack lasted 24 days.

He was advised about diet and received injections of Vitamen C and 40 cc. 20% glucose solution.

Further progress was satisfactory.

Case No. D.8597. Age 33. Labourer.

Admitted on 24.11.42. as a case of Secondary syphilis.

He received a course of "intensive" treatment with Mapharside combined with two sessions of hyper-pyrexia (B.Coli. vaccine). Total dosage was 0.54 gm.

Icterus appeared 90 days after this course. The jaundice was mild, the urine contained a little bile and the icteric index was 33. The duration was uncertain as he was transferred temporarily before the jaundice had disappeared. When he reported back further progress was satisfactory. He was advised about diet and received 100 mgm Vitamen C intra-muscularly during the attack.

Case No. D.8604. Age 31. Truck driver.

Admitted on 25.11.42. as a case of Sero-positive primary syphilis.

He was given an "intensive" (eight-day) course of treatment with Mapharside combined with two sessions of hyperpyrexia (polyvalent B. Coli vaccine). Total dosage: 0.72 gm.

The attack of jaundice developed 69 days after this course. On reporting he stated that the jaundice had been present for five days. He still had a slight icteric tinge, but no bile was detected in the urine and the icteric index was 15. He defaulted from treatment after this visit. When he returned three months afterwards he was in good health.

Duration of the disease was uncertain.

Case No. D.8608. Age 44. Quarry-man.

Admitted on 27.11.42. as a case of Aortic incompetence.

The dosages of anti-syphilitic drugs given before the onset of jaundice were: 69 cc. Acetylarsan, 3.9 gm. trivalent arsenic (Stabilarsan, Neokharsivan) and 4.1 gm bismuth.

The jaundice developed 52 days after the fifteenth (last) injection of the second course and within 337 days of the beginning of treatment. He experienced epigastric pains for two days about two weeks before the onset of the attack. Oral sepsis was present.

The jaundice was mild, the urine contained a little bile and the icteric index was 42. The duration of the attack was 18 days.

He was instructed about taking a low fat diet. He received 40 c.c. 20% glucose solution intravenously on three occasions and 10 c.c. dehydrocholin intravenously on two occasions.

Anti-syphilitic therapy was resumed 3 days before the disappearance of jaundice and Acetylarsan was introduced three months later.

He defaulted in 1944.

Case No. D.8659. Age 34. Railway worker.

Admitted on 8.12.42. as a case of Sero-negative primary syphilis.

Treatment prior to jaundice consisted of 5.1 gm Neokharsivan and 1.0 gm. bismuth.

Icterus appeared 14 days after the first injection of the second course and within 132 days of the commencement of therapy. Four days before the onset he noted that his urine was "dark". A history of alcohol was obtained. He had several bad teeth and suffered from albuminuria. On reporting he was found to be moderately severely jaundiced and the urine contained much bile. The disease lasted 25 days.

He was given advice about diet and received two intravenous injections of 20 c.c. glucose solution and 200 mgm Vitam C. intramuscularly.

Immediately the attack ended bismuth therapy was resumed. Acetylarsan was introduced within two months and was succeeded by Neokharsivan three weeks later. 100 mgm Vitamen C was administered intramuscularly with each injection. Further progress was satisfactory.

Case No. D.8670. Age 19. Seaman.

Admitted on 12.12.42. as a case of Sero-positive primary syphilis.

He received an "intensive" (eight-day) course of treatment with Mapharside combined with two sessions of inductopyrexia.

Jaundice apparently developed about one month after this course. He stated that he had been treated for the condition in hospital for two weeks. No evidence of icterus was found to be present when he reported about a week after the attack.

Further progress was uneventful, but he defaulted in July, 1943.

Case No. D.8671. Age 24. Clerk.

Admitted on 11.12.42. as a case of Sero-negative primary syphilis.

Anti-syphilitic treatment prior to jaundice consisted of 1.05 gm. Evarsan, 2.5 c.c. Acetylarsan and 1.5 gm. bismuth.

Icterus appeared within about a month of the beginning of treatment and shortly after the eighth injection of the first course. He stated that he had been treated for the condition by his own doctor. On examination no trace of jaundice was found and the icteric index was 22. About two to three weeks before the attack he had purpuric spots on both legs. The duration of jaundice was uncertain.

Anti-syphilitic treatment was resumed with bismuth. Acetylarsan was introduced two months later and was succeeded by Stabilarsan within one month. Novarsenobillon was then given on the following course and progress was satisfactory until he was transferred to another clinic five months afterwards.

Case No. D.8675. Age 28. Stoker.

Admitted on 11.12.42. as a case of Sero-negative primary syphilis.

Treatment had been started before he came to the clinic. This was continued and he received 3.75 gm Neokharsivan and 2.7 gm bismuth prior to the onset of jaundice.

Icterus developed 20 days after the ninth injection of the first course and within 84 days of the beginning of treatment. The icteric index was 48 (later 91) and he was admitted to the ward for 21 days on the following day.

He received the special diet for jaundice and Kapilon by intramuscular injection on seven occasions.

He defaulted after leaving the ward although icterus was still present. The duration of the attack was uncertain.

Case No. D.8714. Age 29. Seaman.

Admitted on 17.12.42. as a case of Sero-positive primary syphilis.

Treatment had been started before he came to the clinic. This was continued and he received 5.25 trivalent arsenic, 0.78 gm Mapharside and 6.8 gm bismuth before jaundice developed.

The jaundice appeared 62 days after the eleventh (last) injection of the second course and within approximately eight months of the beginning of treatment. The jaundice was severe, the urine contained bile and the icteric index was 125 (later 143). He was admitted to the ward for 27 days and the duration of the attack was 42 days.

The special diet for jaundice and veracolate (two tablets thrice daily) were prescribed.

Anti-syphilitic treatment was resumed with bismuth 23 days after the disappearance of jaundice. Progress was satisfactory but he defaulted from treatment after the fourth injection.

Case No. D 8715. Age 37. Seaman.

Admitted on 17.12.42. as a case of Congenital syphilis.

Prior to the onset of jaundice he received 0.66 gm Mapharside and 2.8 gm bismuth.

Icterus appeared 5 days after the eleventh (last) injection of the first course and within 135 days of the beginning of treatment. A history of alcohol was obtained. Bile was found in the urine and the icteric index was 83. (later 105).

He was admitted to the ward for 11 days and the duration of the attack was 26 days. He lost a stone in weight.

Treatment consisted of the special jaundice diet only and rest in bed.

Progress was satisfactory after leaving the ward, but he defaulted two weeks later.

Case No. D. 8797. Age 36. Labourer.

Admitted on 4.1.43. as a case of Sero-negative primary syphilis.

He received an "intensive" (eight-day) course of anti-syphilitic treatment with Mapharside combined with two sessions of hyperpyrexia (one by the inductotherm and one with polyvalent B.Coli vaccine).

The icterus appeared 69 days after the completion of this course. The urine contained bile and a trace of albumin, and the icteric index was 45 on the following day. He admitted taking beer soon after receiving the above course but denied any recent drinking. The disease ran a mild course and lasted 15 days.

He was advised about diet and was given two injections of 20 c.c. 20% glucose intravenously.

Further progress was satisfactory.

Case No. D.8805. Age 51. Machinist.

Admitted on 5.1.43. as a case of G.P.I.

Treatment had been started before he came to the clinic. This was continued and he received 23 gm Tryparsamide and 2.6 gm bismuth before jaundice developed.

Icterus appeared 7 days after the thirteenth injection of the first course and within 4 months of the commencement of therapy. The jaundice was marked and the urine contained bile. The icteric index rose to 111. The liver was one finger breadth below the costal margin. He was admitted to the ward on the following day. One week after the onset the serum albumin was 3.35 ɣgms% and the serum globulin 2.15 ɣgms%. Four days after the onset the bleeding time was 2 minutes and six days later it was $2\frac{1}{2}$ minutes.

He remained in the ward for 23 days and the duration of the attack was 49 days.

He received the special diet for jaundiced patients (containing skim milk, white of egg, lean meat and cheese). Glucose orally, saline purgatives and veracolate (two tablets thrice daily) were prescribed.

Immediately jaundice disappeared colloidal iodine (10 c.c.) intravenously was given once weekly for two weeks and succeeded by bismuth for two weeks, after which the colloidal iodine was resumed. The second post-icteric course consisted of colloidal mercury and Bisantol was substituted for this in the third course. No more arsenic was given. Further progress was satisfactory.

Case No. D.8879. Age 32. General dealer.

Admitted on 13.1.43. as a case of Sero-negative primary syphilis.

He received an "intensive" (eight-day) course of treatment with Mapharside combined with two sessions of hyperpyrexia (B.Coli vaccine).

Icterus appeared 64 days after the completion of this course. Two days before onset he complained of lower abdominal pain. The onset was mild, bile was found in the urine and the icteric index was 13. On the following day the jaundice deepened, he complained of headache and the icteric index was now 48 (later 100). He was admitted to the ward for 20 days and the attack lasted 32 days.

Diet, saline purgatives, Mist. Jaund. Co., and veracholate were prescribed. He also received Kapilon intramuscularly and one intravenous infusion of 1,600 c.c. of 20% glucose solution.

Further progress was satisfactory.

Case No. D 8958. Age 57. Labourer.

Admitted on 26.1.43. as a case of Tabes dorsalis.

Prior to jaundice he received 34 c.c. Acetylarsan, 5.0 gm. Tryparsamide and 3.1 gm bismuth.

Icterus appeared within approximately six months of the beginning of treatment and after the fifteenth (last) injection of the first course. When he reported he stated that he had been off work with jaundice. A slight degree of jaundice conjunctivae was still present but no bile was detected in the urine. He had severe pyorrhoea. The duration of the attack was uncertain.

He was advised about diet and received 100 mgm Vitamen C intramuscularly once.

Immediately the attack ended bismuth treatment was resumed and Acetylarsan was introduced in the second post-icteric course. Further progress was uneventful.

Case No. D. 9045. Age 72. Retired.

Admitted on 9.2.43. as a case of Tertiary syphilis (gumma)

He received bismuth only prior to the development of jaundice. The total dosage was 2.4 gm.

Jaundice appeared about six months after the commencement of therapy and after the eighteenth (last) injection of the first course. The jaundice had developed before he reported with it. A slight icteric tinge was still present, no bile was detected in the urine and the icteric index was 13. The approximate duration of the attack was 28 days. Radiological examination revealed fibrosis of the lungs.

Diet was advised and he received 20 c.c. of 20% glucose solution.

Bismuth therapy was resumed as soon as the jaundice disappeared, but he defaulted after the fifth injection.

He died one year later from unresolved pneumonia.

Case No. D. 9070. Age 38. Sergeant-Major.

Admitted on 13.2.43. as a case of Sero-positive primary syphilis.

Treatment had been commenced before he came to the clinic. This was continued and he received 2.7 gm Kharsulphan (I.M.) and 27 c.c. colloidal mercury. The treatment prior to admission had consisted of five unit courses of arsenic and bismuth (dosages not recorded).

Icterus appeared 24 days after the ninth injection of the sixth course and within approximately eight months of the commencement of therapy. Two weeks before the onset he complained of occipatal headache particularly severe at night. At the time of onset the urine contained bile and the icteric index was 67 on the following day, eventually rising to 91 three days later. The duration was 25 days.

He was advised about diet and received 100 mgm Vitamen C intramuscularly on three occasions. Three intravenous infusions of 1,200 c.c 20% glucose solution were also given.

Bismuth therapy was resumed as soon as the jaundice disappeared and Acetylarsan was introduced one month later.

Further progress was satisfactory.

Case No. D.9093. Age 32. Gardener.

Admitted on 16.2.43. as a case of Sero-negative primary syphilis

Prior to jaundice he received 4.8 gm arsenic (Novarsenobillon, Stabilarsan) and 3.4 gm bismuth.

The jaundice appeared 16 days after the third injection of the second course and within 130 days of the beginning of treatment. He complained of nausea one week before the onset. The onset of jaundice was mild and the urine contained bile. There was a worsening of his condition next day and he was admitted to the ward for 14 days. The serum albumin was 3.63 mgsm% and the serum globulin was 1.95 mgms%. The bleeding time was 3 minutes. The icteric index rose to 83. The duration of the disease was 18 days.

Diet, glucose orally, one intravenous (1200 c.c.) infusion of glucose solution and yeast tablets were prescribed.

Immediately jaundice had disappeared bismuth was resumed but he defaulted after the second injection.

Case No. D.9143. Age 56. Seaman.

Admitted on 23.5.42. as a case of Latent syphilis.

Anti-syphilitic treatment prior to the onset of jaundice consisted of 2.7 gm arsenic (Novarsenobillon, Stabilarsan) and 2.5 gm. bismuth.

Icterus appeared 60 days after the sixth injection of the second course and 268 days from the beginning of treatment. About two months before the onset he complained of rheumatic pains and one week afterwards an urticarial eruption developed on the buttocks. At first the jaundice was mild but deepened during the next three days and he was admitted to the ward.

Special diet, saline purges, Mist. Jaund. Co., and Kapilon (1 c.c. intramuscularly on six occasions) were prescribed. One week after admission the icteric index was 83 and he was given 1,600 c.c. glucose solution intravenously. Two weeks after admission ascites and oedema of the ankles developed. There was no liver enlargement. Nine days later he vomited a basinful of blood-stained fluid and the stools were "tarry". In the following week his condition worsened and he became lethargic and dehydrated and developed hiccough. One month after admission to the ward and 35 days after the onset of jaundice he developed acute abdominal pain and died shortly afterwards.

The principle findings of the post-mortem examination were:-

(1) Cirrhosis of the liver.

(2) Two chronic gastric ulcers and one acute gastric ulcer.

(3) Ascites.

(4) Toxic changes in most organs.

Case No. D.9177. Age 40. Fitter.

Admitted on 1.3.43. as a case of Sero-positive primary syphilis.

Anti-syphilitic treatment prior to the onset of jaundice consisted of 4.95 gm Novarsenobillon and 3.6 gm. bismuth.

Icterus developed 14 days after the tenth injection of the first course and 88 days from the beginning of treatment. The urine contained much bile and also a little albumin which disappeared in a week. A definite alcoholic history was obtained. The attack lasted 48 days.

He was advised about diet and received eleven intravenous infusions (varying from 800 c.c. to 2,000 c.c.) of 20% glucose solution.

Immediately jaundice had cleared, anti-syphilitic treatment was resumed with bismuth. One month afterwards Acetylarsan was given and succeeded two months later by Evarsen. Further progress was uneventful.

Case No. D.9202. Age 32. A.B., Royal Navy.

Admitted on 3.3.43. as a case of Sero-negative primary syphilis.

He received an "intensive" course (eight-day) of treatment with Mapharside combined with two sessions of hyperpyrexia (polyvalent B. Coli vaccine).

Jaundice developed 34 days after the completion of this course. The urine contained bile, the stools were pale and the icteric index was 20 (later 80). He was admitted to the ward for 26 days. One week after the onset moderate liver enlargement was detected. He had several bad teeth and developed gingivitis (streptococcal) while in the ward. The bleeding time was 1½ minutes. The duration of the disease was 45 days.

A special diet, saline purgatives, glucose orally and Mist. Jaund. Co., were prescribed.

He progressed favourably but defaulted six months afterwards.

Case No. D.9223. Age 43. Riveter.

Admitted on 7.3.43. as a case of Latent syphilis.

Prior to jaundice he received 4.35 gm Novarsenobillon and 1.4 gm bismuth. Part of this treatment was given at another clinic.

The jaundice developed 13 days after the tenth injection of the first course and 198 days from the beginning of treatment. He admitted heavy drinking just before the onset of the attack. The urine contained bile and the icteric index rose to 118. He was admitted to the ward for 16 days and the duration of the disease was 60 days.

He was put on diet and tablets of ascorbic acid and Vitamen B_1 were given. Shortly after leaving the ward an exacerbation of the jaundice occurred and two intravenous infusions (2,000 c.c.) of glucose solution were given.

Fourteen days after the end of the attack a course of colloidal iodine (10 c.c. intravenously once weekly) was given over nine weeks. Bismuth was given in the second post-icteric course and Acetylarsan was introduced nine months later. Progress was satisfactory until he was transferred to another clinic in 1945.

Case No. D.9239. Age 36. Steel erector.

Admitted on 9.3.43. as a case of Secondary syphilis.

Anti-syphilitic treatment prior to the onset of jaundice consisted of 5.4 gm Novarsenobillon and 2.5 gm. bismuth.

Icterus appeared 31 days after the tenth injection of the first course and 87 days from the commencement of treatment. The jaundice was moderately severe, bile was detected in the urine and the icteric index was 114. Admission to the ward was refused. He had several bad teeth. The duration was 24 days.

He was advised about diet. Two intravenous injections of 40 c.c. 20% glucose solution and two intravenous "drips" of glucose solution were administered. Vitamen C (100 mgm) was given by intramuscular injection on two occasions.

One week after the disappearance of icterus anti-syphilitic treatment was resumed with bismuth but he defaulted after the second injection. He reported back seven months later and was given Novarsenobillon and bismuth.

Progress was satisfactory.

Case No. D. 9269. Age 32. Miner.

Admitted on 8.3.43. as a case of Sero-positive primary syphilis.

The dosages of anti-syphilitic drugs given before the onset of jaundice were 4.35 gm Novarsenobillon and 3.0 gm bismuth.

Icterus appeared 23 days after the eleventh (last) injection of the first course and 91 days from the commencement of therapy. The jaundice was mild and the icteric index 39. The duration was 33 days.

He was put on a diet and yeast tablets (six daily) were prescribed.

Immediately the jaundice cleared up bismuth therapy was resumed and Acetylarsan was introduced within two months. He complained of epigastric pain and nausea, about two weeks after the jaundice. He later received Novarsenobillon and progressed favourably.

Case No. D. 9278. Age 70. Unemployed.

Admitted on 15.3.43. as a case of Primary syphilis.

The "dark ground" examinations of the serum from the suspected primary lesion, and the blood tests were all negative. He was kept under observation and the blood tests became positive within two months. At the same time jaundice occurred and a provisional diagnosis of syphilitic hepatitis was made.

The urine contained bile and the icteric index was 63 (later 100). There was no liver enlargement he was admitted to the ward and anti-syphilitic therapy was commenced with Bisantol (1 c.c. twice weekly). Acetylarsan was introduced in the next week (1 c.c. at first then 2 c.c. weekly). At the same time he was put on the special diet. He was treated in the ward for 21 days and the duration of the attack was 22 days.

On leaving the ward he progressed favourably and the injections of Acetylarsan and Bisantol were continued but he defaulted five weeks later.

Case No. D. 9357. Age 39. Fireman.

Admitted on 30.3.43. as a case of Secondary syphilis.

Prior to jaundice he was given 4.8 gm Evarsen and 1.5 gm bismuth.

The jaundice developed eight days after the thirteenth (last) injection of the first course and 102 days from the beginning of treatment. He complained of stiffness of the knee-joints and the shoulders during the week preceding onset. At first no bile was detected in the urine. The icteric index rose to 56. The disease lasted 19 days.

Diet was advised and three intravenous injections of 20 c.c. 20% glucose solution were given.

Following the attack he defaulted and reported back in 1945. Before anti-syphilitic treatment could be started he was transferred to another clinic.

Case No. D. 9442 Age 20. Officers Steward, Royal Navy.

Admitted on 10.4.43. as a case of Sero-negative primary syphilis

Anti-syphilitic therapy prior to the appearance of jaundice consisted of 2.4 gm arsenic (Novarsenobillon, Neokharsivan) and 2.0 gm bismuth.

Icterus developed six days after the seventh injection of the first course and 48 days from the beginning of treatment. The urine contained bile and the icteric index rose to 33. He was admitted to the ward for 16 days and the duration of the attack was 17 days.

Special diet and veracolate (two tablets thrice daily) were prescribed.

Eleven days after the disappearance of icterus bismuth treatment was resumed. He progressed satisfactorily but defaulted after the fifth injection.

Case No. D. 9450. Age 46. Fireman.

Admitted on 12.4.43. as a case of Sero-positive primary syphilis

Prior to jaundice he received 4.75 gm Novarsenobillon and 3.0 gm. bismuth.

Icterus developed 21 days after the fourteenth (last) injection of the first course and 85 days from the beginning of treatment. The urine contained bile and the icteric index rose to 136. No liver enlargement detected at first but moderate enlargement was found two weeks later accompanied by tenderness in the right hypochondrium. He was treated as an in-patient for 28 days and the disease lasted 42 days.

He was on a diet. Vitamen B (intramuscularly injected) and yeast orally were given.

Immediately jaundice disappeared anti-syphilitic treatment was resumed with bismuth and Acetylarsan was introduced four months later. About this time a radiological examination of the gall-bladder was done but was negative. Mapharside was given about seven months after the jaundice and he progressed satisfactorily.

Case No. D. 9467. Age 25. Storeman.

Admitted 13.4.43. as a case of Sero-positive primary syphilis.

Anti-syphilitic treatment prior to the onset of jaundice consisted of 3.3 gm Neokharsivan and 20 c.c. bismuth ethyl camphorate.

Icterus appeared 18 days after the twelfth (last) injection of the first course and 95 days from the commencement of therapy. There was bile in the urine and the icteric index was 105. He was admitted to the ward for seven days. The duration of the attack was 15 days.

Diet with supplements (e.g. skim milk, white of egg etc.) cascara sagrada, glucose orally and yeast tablets were prescribed.

As soon as jaundice disappeared bismuth injections were received but he defaulted after the first injection. He returned four months later when Novarsenobillon and bismuth were given. Further progress was uneventful.

Case No. D.9494. Age 24. Assistant Cook.

Admitted on 17.4.43. as a case of Secondary syphilis

Prior to jaundice he received 9.3 gm Novarsenobillon and 5.6 gm bismuth.

The jaundice appeared 117 days after the commencement of treatment and after the completion of the second course. The jaundice was marked, the urine contained bile and the icteric index was 100. There was no hepatic enlargement. He was admitted to the ward for 14 days which was the duration of the attack.

Diet, saline purgatives, veracolate (two tablets thrice daily) and vitamen B1 (30 mgm intramuscularly once daily) were prescribed.

He did not report back to the clinic after leaving the ward, but received a post-icteric course of treatment from his own medical officer.

Case No. D.9552. Age 29. Bus driver.

Admitted on 27.4.43. as a case of Latent Syphilis.

Anti-syphilitic treatment before jaundice consisted of 2.4 gm. Stabilarsan and 1.4 gm bismuth.

Icterus developed 60 days after the fifth injection of the first course and within 108 days of the beginning of treatment. When he reported he stated that the jaundice had been present for 7 days. There still was a trace of icterus present, the urine contained a little bile and the icteric index was 33 (later 71). There was no hepatic enlargement. The duration was 41 days.

He was given a diet sheet. Seven intravenous injections (40 c.c.) of glucose solution, with 100 mgms. Vitamen C included, were administered.

Antisyphilitic treatment was resumed with Bisantol 29 days after the disappearance of jaundice. Novarsenobillon and Biglucol were introduced three months later, and he progressed favourably until he defaulted seven months afterwards.

Case No. D.9629. Age 58. Clerk.

Admitted on 7.5.43. as a case of Sero-positive primary syphilis.

Anti-syphilitic treatment prior to jaundice consisted of 3.0 gm. Novarsenobillon, 13 c.c. Acetylarsan and 3.8 gm bismuth.

Icterus appeared a day after the first injection of the second course and 141 days from the beginning of treatment. On reporting he stated that the jaundice had been present for two weeks and he had received treatment from his own doctor. Icterus was still present, also bile in the urine and the icteric index was 50. The duration was 48 days.

He was advised to continue on a low fat diet. Three intravenous infusions of 20% glucose solution (1,200 c.c.) two injections of 40 c.c. glucose solution and one injection of 10 c.c. dehydrocholin were administered.

Eleven days after the end of the attack he received four injections of colloidal iodine (10 c.c. intravenously given once weekly. Three months later Acetylarsan was introduced. Two months after this the mucus membrane of the mouth was tinged yellow and the icteric inded was 50, but no bile was found in the urine. One week afterwards he had improved, but bismuth injections were not restarted for one month. He progressed satisfactorily but defaulted in 1945.

Case No. D. 9636. Age 27. Labourer.

Admitted on 8.5.43. as a case of Latent syphilis.

Prior to jaundice he received 16 gm. Trypar-samide, 27 c.c. Acetylarsan and 3.8 gm. bismuth. Part of this treatment was given outside the clinic.

Icterus appeared eleven days after the ninth injection of the first course and 132 days from the beginning of treatment. The jaundice was mild but he was admitted to the ward for thirteen days which was the duration of the jaundice.

Special diet, yeast tablets (twelve daily) and Gregory's powder were prescribed.

On leaving the ward he was transferred to another clinic before anti-syphilitic treatment was resumed.

Case No. D.9639. Age 60. Mason.

Admitted on 10.5.43. as a case of Syphilitic basal meningitis.

Antisyphilitic treatment before jaundice consisted of 41 c.c. Acetylarsan, 1.35 gm. Evarsen, 3.2 gm bisglucol and 19 c.c. Bisantol.

Jaundice developed 21 days after the ninth injection of the second course and within 271 days of the beginning of treatment of jaundice. The jaundice was moderately severe and there was no hepatic enlargement. He had some decayed teeth. At the commencement of antisyphilitic treatment he was suffering from a generalized psoriasis. The duration of the jaundice was 21 days.

He was advised about diet and received three intravenous injections (20 c.c.) of 20% glucose.

Anti-syphilitic treatment was resumed with Bisantol as soon as the jaundice disappeared and Acetylarsan was introduced in the second post-icteric course.

Progress was satisfactory.

Case No. D.9711. Age 56. Clerk.

Admitted on 19.5.43. as a case of Tabes dorsalis.

Colloidal mercury was the only antisyphilitic drug used before jaundice developed. The dosage received was 77 c.c. (intramuscular injection).

The jaundice appeared approximately seven months after the commencement of therapy and after the tenth injection of the second course. When he reported he stated that the jaundice had developed during the "rest period" following the second course and treatment had been given by his own doctor. He still had a trace of icterus and the urine contained a little bile. The icteric index was 14. The approximate duration of the jaundice was 38 days.

He was advised to remain on a low fat diet and was given dehydrocholin intravenously (10 c.c.) on four occasions. Colloidal iodine was also given intravenously.

Five days after the disappearance of jaundice antisyphilitic treatment was resumed with Bisantol. Acetylarsan was given in the second post-icteric course and further progress was satisfactory.

Case No. D.9747. Age 19. Seaman.

Admitted on 25.5.43. as a case of Sero-negative primary syphilis.

Prior to jaundice he received 3.45 gm. Novarsenobillon and 2.7 gm bismuth.

Icterus appeared 7 days after the eighth injection of the first course and 64 days from the beginning of treatment. The jaundice was mild, the urine contained a trace of bile and the icteric index was 71. He denied taking alcohol. There was no liver enlargement. The serum albumin was 4.58 ½gm% and the serum globulin was 2.23 ½gm% (two days after the onset). The duration was 17 days.

He was instructed about diet and was given four intravenous injections (40 c.c.) of 20% glucose and two intravenous infusions of glucose solution.

Bismuth injections were restarted 11 days after the end of the attack. Acetylarsan was introduced one month later and was succeeded by Novarsenobillon a year afterwards. He progressed satisfactorily but he defaulted in 1944.

Case No. D.9760. Age 43. Bricklayer.

Admitted on 24.8.42. as a case of Secondary syphilis.

Prior to the onset of jaundice he received 2.25 gm. Novarsenobillon and 1.2 gm bismuth.

Icterus appeared 54 days after the fifth injection of the first course and 156 days from the beginning of treatment. The prodromal stage was characterised by nausea (morning) for the week before the onset. The jaundice was moderately severe the urine contained bile and the icteric index was 125. A history of alcohol was obtained. His teeth were very bad. He was admitted to the ward for 15 days. Five days after the onset of the attack the liver was found to be two finger breadth's below the costal margin.

Special diet, saline purgatives, Mist. Jaund. Co., glucose orally (160 gm daily) were prescribed. 1 c.c. Kapilon (I.M.) was also given.

He defaulted on leaving the Ward while a trace of jaundice was still present. Duration of the attack was uncertain. Three months later he reported with a reinfection of syphilis and received one injection of arsenic before being transferred to another clinic.

Case No. D. 9779. Age 41. Coppersmith.

Admitted on 29.5.43. as a case of Tertiary syphilis (Gumma)

Antisyphilitic treatment prior to jaundice consisted of 39 c.c. Acetylarsan, 2.7 gm. Stabilarsan and 4.9 gm bismuth.

The jaundice developed 29 days after the tenth injection of the second course and 190 days from the beginning of treatment. There were no prodromal symptoms, but a history of alcohol was obtained. The jaundice was moderately severe, bile was found in the urine and the icteric index rose to 50. Admission to the ward was refused. A trace of albumin was present in the urine for the first two weeks. The duration of jaundice was 27 days.

He was instructed about a low fat diet. Dehydrocholin (10 c.c.) was administered intravenously with 20-40 c.c. of 20% glucose solution on four occasions. Vitamen B_1 (30 mgm) was given intramuscularly on three occasions.

Sixteen days after the end of the attack of jaundice antisyphilitic treatment was resumed with bismuth, and Acetylarsan was introduced one month later. Further progress was uneventful.

Case No. D. 9794. Age 29. Engineer.

Admitted on 1.6.43. as a case of Secondary syphilis.

Treatment prior to jaundice consisted of 2.85 gm. Stabilarsan (intramuscular) and and 2.4 gm. bismuth.

Icterus developed 7 days after the eighth injection of the first course and 57 days from the beginning of treatment. Treatment had been commenced by his own doctor but on reporting a trace of icterus was found to be present, the urine contained a little bile and the icteric index was 36. The duration of the attack was 31 days.

He was instructed to remain on a low fat diet. Two intravenous injections (40 c.c.) glucose solution were given.

Anti-syphilitic treatment was resumed with Neokharsivan and bismuth one week after the disappearance of icterus. Vitamen C (100 mgm intramuscularly) were given with each injection. Further progress was satisfactory.

Case No. D. 9817. Age 25. Unemployed.

Admitted on 5.6.43. as a case of Sero-positive primary syphilis.

Anti-syphilitic treatment had been commenced before he came to the clinic. This was continued and the total dosages of drugs given before the onset of jaundice were 1.95 gm Novarsenobillon and 3.75 gm. bismuth.

The jaundice developed 5 days after the third injection of the third course and 229 days from the beginning of treatment. Two weeks before the onset of icterus he complained of vague joint pains and arsenic was withdrawn. The jaundice was mild, the urine contained a little bile and the icteric index was 40. Treatment was given by his own doctor. The duration was 14 days.

Nine days after the jaundice cleared anti-syphilitic treatment was resumed with Bisantol and Acetylarsan was introduced one month later. Stabilarsan was given in the second post-icteric course. Progfess was satisfactory, but he defaulted six months afterwards.

Case No. D.9854. Age 25. A.B. Royal Navy.

Admitted on 14.6.43. as a case of Latent syphilis.

Prior to jaundice he received 3.9 gm arsenic (Neokharsivan, Stabilarsan) and 3.4 gm bismuth.

Icterus developed 21 days after the first injection of the second course and 95 days from the beginning of treatment. Two weeks before the onset he "felt upset" for a week. The jaundice was severe but he refused admission. There was no liver enlargement. He received treatment for the jaundice from his own doctor, and did not return to the clinic for four months. The duration of the disease was uncertain.

When he reported back no evidence of jaundice was found and a course of Novarsenobillon and bismuth was started without ill effect.

Case No. D.9865. Age 23. Garage attendant.

Admitted on 9.11.43. as a case of Sero-positive primary syphilis.

He received 5.25 gm. Stabilarsan and 3.6 gm bismuth before jaundice developed.

Icterus appeared 14 days after the twelfth (last) injection of the first course and 112 days from the beginning of treatment. Two weeks before the onset he had muscular pains in the left forearm. The jaundice was mild, bile was found in the urine and the icteric index was 63. The duration was 28 days.

He was given instructions about diet and advised to rest for three weeks. Dehydrocholin (10 c.c.) and colloidal iodine (10 c.c.) were administered intravenously on two occasions.

Anti-syphilitic treatment was not resumed for 98 days after the disappearance of jaundice. Acetylarsan and Bisantol were then given. Further progress was satisfactory.

Case No. D.9873. Age 35. Chemist.

Admitted on 12.6.43. as a case of Congenital syphilis.

Prior to jaundice he received 2.85 gm. Neokharsivan and 2.1 gm. bismuth.

Icterus appeared 9 days after the eleventh (last) injection of the first course and 81 days from the commencement of therapy. One week prior to onset he complained of dyspepsia. When jaundice appeared no bile was detected in the urine for the first two days. The icteric index rose to 31. The duration was 29 days.

He was issued with a diet sheet. Vitamen C and four intravenous "drips" of glucose solution were given.

Anti-syphilitic treatment was resumed with bismuth 5 days after the disappearance of jaundice and Acetylarsan was introduced two months later. Progress was satisfactory.

Case No. D. 9933. Age 31. Salesman.

Admitted on 22.6.43. as a case of Sero-negative primary syphilis.

Before jaundice developed he received 1.05 gm. Stabilarsan and 0.9 bismuth.

Icterus appeared 87 days after the third injection of the first course and 97 days from the commencement of therapy. The onset was accompanied by tenderness over the upper abdomen and the liver was one finger breadth below the costal margin. The urine contained bile and the icteric index rose to 77. There was also pain in the left shoulder and nausea, the latter ceasing about two weeks after the onset. A history of alcohol was obtained. He was admitted to the ward for 16 days and the duration of the disease was 29.

Diet and yeast tablets (twelve daily) were prescribed. He was given an intravenous infusion of 1,200 c.c. 20% glucose solution on admission.

An injection of 0.05 gm bismuth was given 10 days before the disappearance of the jaundice. This caused anorexia and bismuth was stopped until one month after the end of the attack.

Acetylarsan was introduced three months later and was succeeded by Neokharsivan within a few weeks. Further progress was uneventful.

Case No. D. 9911. Age 40. Barman.

Admitted on 17.6.43. as a case of Sero-positive primary syphilis.

Prior to jaundice he was given 3.9 gm Stabilarsan and 3.0 gm bismuth. Glucose was given orally with each injection during the latter part of the course.

Icterus appeared 28 days after the tenth injection of the first course and 100 days from the beginning of treatment. The urine was found to contain bile and the icteric index was 83 (later 125). He was admitted to the ward for 17 days and the duration was 35 days.

Special diet and saline purgatives were prescribed. He was also given nicorbin (two tablets thrice daily), dehydrocholin (10 c.c.) and four intravenous injections (40 c.c.) of glucose solution.

Five days after the disappearance of jaundice bismuth injections were resumed. Acetylarsan was introduced in the second post-icteric course. Further progress was satisfactory.

Case No. E.101. Age 29. Plumber.

Admitted on 20.7.43. as a case of Secondary syphilis.

Prior to the onset of jaundice he received 4.35 gm. Novarsenobillon and 2.6 gm. arsenic.

Icterus appeared 22 days after the tenth injection of the first course and 94 days from the beginning of treatment. The jaundice had been present for two days when he reported for examination. The urine contained bile and the icteric index was 40. His condition worsened and he was admitted to the ward for 28 days. The liver became moderately enlarged and the icteric index rose to 167. One month after the onset the serum phosphatase was 3.6 mgm% and blood cholesterol 211 mgm%. One week later the serum phosphatase was 3.7 mgm% and the blood cholesterol 182 mgm%. The bleeding time was 2¼ minutes. The duration of jaundice was 62 days. His teeth were bad.

He received a special diet and 1,200 c.c. 20% glucose solution intravenously, glucose orally (5 ounzes daily) insulin (10 units twice daily) and ascorbic acid (50 mgm. twice daily) were also given.

Bismuth injections were resumed 25 days after the disappearance of jaundice and Acetylarsan later.

Further progress was satisfactory.

Case No. E.124. Age 41. Labourer.

Admitted on 23.7.43. as a case of Tabes dorsalis.

Anti-syphilitic treatment prior to jaundice consisted of 16 gm. Tryparsamide and 31 c.c. Bisantol.

The jaundice developed 59 days after the twelfth (last) injection of the first course and within 131 days of the beginning of treatment. Six weeks prior to onset he had anorexia and was "off work for 14 days". The jaundice was moderately severe, and the icteric index was 67. He was admitted to the ward for 17 days. The duration was 29 days. There was no liver enlargement.

Diet and hot nightly baths were prescribed. He also received glucose orally (5 ounzes daily) insulin (10 units twice daily) and ascorbic acid (50 mgm twice daily).

Immediately jaundice disappeared he was given 10 c.c. colloidal iodine intravenously once weekly for four weeks. Six weeks after the end of the attack he had muscular stiffness of the fronts of the thighs and two 20 c.c. injections of glucose solution were given. Bismuth was resumed two months later. Progress was good. He was transferred to another clinic after the fifth injection.

Case No. E.136. Age 36. Café owner.

Admitted on 25.7.43. as a case of Sero-positive primary syphilis.

Prior to jaundice he received 3.55 gm Stabilarsan and 2.1 gm bismuth.

Icterus appeared 140 days after the commencement of therapy and followed the eighth injection of the first course. The urine contained a trace of bile and the icteric index was 67. He stated he had an attack of "flu" a short time before jaundice. His teeth were in a poor condition. He received treatment from his own doctor, but 20 c.c. glucose solution and three injections of dehydrocholin (10 c.c.) were given intravenously. The duration was 12 days.

Bismuth injections were restarted 30 days after the disappearance of jaundice but he defaulted temporarily after a few injections. When he returned two months later Novarsenobillon and bismuth were given without ill effect but he defaulted again three months afterwards.

Case No. E.189. Age 24. Seaman.

Admitted on 16.1.42. as a case of Sero-positive primary syphilis.

Treatment had been commenced before he came to the clinic. This was continued and he received 5.7 gm Neokharsivan and 2.6 gm bismuth before jaundice developed.

Icterus appeared 26 days after the tenth injection of the first course and 98 days from the beginning of treatment. There was a history of alcohol. The urine contained bile and the icteric index was 71 (later 95). He was admitted to the ward for 8 days. Two days after the onset he complained of abdominal pain. The liver was two finger breadths below the costal margin. The duration of the attack was 51 days.

Diet, Mist. Jaund. Co., and one intravenous infusion (800 c.c.) of 20% glucose solution were prescribed.

One week after the jaundice had cleared, anti-syphilitic treatment was resumed with Bisantol. Acetylarsan was introduced in this course and was succeeded by Stabilarsan one month later. Progress was satisfactory. He defaulted one year afterwards.

Case No. E.328. Age 73. Fireman.

Admitted on 21.8.43. as a case of Tertiary syphilis (gumma).

Prior to the onset of jaundice he received bismuth only and the total dosage was 2.9 gm.

The jaundice developed 7 days after the first injection of the second course and 125 days from the beginning of treatment. Bile was present in the urine and the icteric index was 50 (later 142)

He was admitted to the ward. Special diet, saline purgatives, glucose orally (5 ounzes daily) insulin (10 units twice daily) and ascorbic acid (50 mgm thrice daily) were prescribed. The insulin was stopped ten days later on account of intolerance.

The jaundice was mild and he was allowed out of bed for a few hours daily five days after admission. Two days after this he complained of irritation of the skin and eight days later oedema of both ankles developed. There was no hepatic enlargement. No crystals of leucin or tyrosine were found in the urine. His condition began to deteriorate and ascites developed. This was "tapped" (the fluid was bile-stained). Crystals of tyrosin were now present in the urine. The abdomen was "tapped" again, the icterus deepened and he died 24 days after the onset of jaundice.

The principle findings of the post-mortem examination were:-

(1) Cirrhosis ofthe liver and acute hepatitis.

(2) Broncho pneumonia.

(3) Enlargement of the spleen.

(4) Toxic changes in all organs.

Case No. E.338. Age 25. Engineer.

Admitted on 7.8.42. as a case of Sero-positive primary syphilis.

Prior to jaundice he received 7.45 gm arsenic (Novarsenobillon, Neokharsivan) and 4.9 gm bismuth.

The jaundice appeared 8 days after the sixth injection of the second course and 152 days from the beginning of treatment. There was a history of alcohol. He had stiffness of the knee joints one week before the onset of jaundice. The jaundice was moderately severe, the urine contained bile and the icteric index was 91 (later 166). He felt weak. No hepatic enlargement was detected. He was treated as an in-patient for 18 days and the duration of the disease was 34 days.

Diet, Mist. Jaund. Co., and saline purgatives were prescribed. Two intravenous infusions of glucose solution (1,200 c.c. each) glucose orally (5 ounzes daily), insulin (10 units twice daily) ascorbic acid (50 mgms twice daily) were given, also 1 c.c. Kapilon intramuscularly.

Three weeks after the disappearance of icterus anti-syphilitic treatment was resumed with bismuth and Acetylarsan was introduced one month later. Neokharsivan was given at the end of this first post-icteric course. The serum albumin was 4.43 ~~%~~gm% and the serum globulin was 2.75 ~~%~~gm% one month after the end of the attack. Progress was satisfactory. He defaulted one year afterwards.

Case No. E.340. Age 14. Schoolboy.

Admitted on 23.8.43. as a case of Congenital syphilis.

Prior to jaundice he received 1.5 gm Tvarsen and 1.9 gm. bismuth. Glucose was given orally just before each injection during the latter part of the course.

The jaundice developed during the "rest period" after the first course and four months from the beginning of treatment. He was treated outside for the condition and no trace of the disease was found when he reported back for the commencement of his second course. The duration was uncertain.

Anti-syphilitic treatment was resumed with bismuth and Acetylarsan was introduced eight months later.

Progress was uneventful.

Case No. E.430. Age 28. Photographer.

Admitted on 6.9.43. as a case of Sero-positive primary syphilis

Anti-syphilitic treatment prior to the onset of jaundice consisted of 1.2 gm. Stabilarsan and 2.3 gm. bismuth.

Icterus appeared 5 days after the twelfth injection of the first course and 86 days from the beginning of treatment. During the two months preceding the onset of the attack, anorexia, epigastric pains and irritation of the skin occurred and a trace of bile appeared in the urine for about a week early in this prodromal stage. When the jaundice developed, bile was found in the urine and the icteric index was 111. The serum albumin was 3.84 gm%, the serum globulin 1.33 gm% and the blood cholesterol 246 mgm%. The stools were pale. He was admitted to the ward and diet, glucose orally (5 ounzes daily) insulin (10 units daily) and ascorbic acid (50 mgms thrice daily) were prescribed.

On the ninth day after admission he became delirious and sweated profusely. 400 c.c. 20% glucose solution was given intravenously, and Paraldehyde per rectum. On the following day the intravenous glucose "drip" was repeated but the condition steadily worsened, and a diagnosis of acute yellow atrophy was made.

On the twelfth day after the onset he became very dehydrated, the pulse was almost imperceptible, respiration was laboured and he became cyanosed. The temperature rose to 104.8°F. and he died shortly afterwards.

No post-mortem examination was carried out.

Case No. E.415. Age 64. Painter.

Admitted on 3.9.43. as a case of Syphilitic meningo-myelitis

Treatment was commenced before he came to the clinic. This was continued and he received 54 gm. Tryparsamide, 46 c.c. Acetylarsan and 7.4 gm bismuth before jaundice developed.

Icterus appeared one day after the tenth injection of the fourth course and about 230 days from the beginning of treatment. He felt "upset" just before the onset of the disease. The jaundice was mild at first and the icteric index was 39 on the following day. He was admitted to the ward, but left at his own request four days later despite worsening condition. The icteric index rose to 83 and he had pain and tenderness in the epigastrium. There was no liver enlargement. He had several very bad teeth. The disease lasted 45 days.

He was put on diet. Glucose orally (5 ounzes daily) insulin (10 units twice daily) and ascorbic acid (50 mgm. twice daily) were given while he was in the ward. On leaving he was given intravenous injections (40 c.c.) and one intravenous infusion (800 c.c.) of 20% glucose solution and also Vitamen B_1 (30 mgm) intramuscularly on five occasions.

Bismuth injections were resumed 71 days after the disappearance of jaundice but discontinued after only two injections because of headache and dizziness. Four months later he was given Acetylarsan and bismuth. Further progress was satisfactory.

Case No. E.518. Age 41. Foreman.

Admitted on 16.9.43. as a case of Secondary syphilis.

Prior to the onset of icterus he received 3.9 gm. Stabilarsan and 3.3 gm. bismuth.

The jaundice developed 7 days after the twelfth (last) injection of the first course and within 99 days of the beginning of treatment. About one month before onset he had noticed that his urine was "dark" and complained of anorexia two weeks later. The jaundice was marked, the urine contained much bile and the icteric index was 50 (later 100). There was no hepatic enlargement. A history of alcohol was obtained. The duration was 56 days.

Diet was advised and ten intravenous injections of dehydrocholin (10 c.c.) were given once daily for ten days.

Anti-syphilitic therapy was resumed with Bisantol 27 days after the disappearance of jaundice. Progress was uneventful until he defaulted one year later.

Case No. E.546. Age 25. Engineer.

Admitted on 21.9.43. as a case of Secondary syphilis.

Anti-syphilitic treatment prior to jaundice consisted of 6.0 gm. Novarsenobillon and 3.4 gm. bismuth.

Icterus developed 18 days after the thirteenth (last) injection of the first course and 98 days from the beginning of treatment. One week before the onset he had nausea and anorexia. The onset was associated with coryza and a sore throat. The tongue was furred. The urine contained much bile and the icteric index was 91. He was admitted to the ward for 21 days and the duration of jaundice was 59 days.

Diet and glucose orally (5 ounzes daily) insulin (10 units twice daily) and ascorbic acid (50 mgms twice daily) were prescribed. He developed a hypoglycaemic attack about a week later and the insulin was withdrawn, glucose and ascorbic acid being continued.

Four days after the disappearance of jaundice anti-syphilitic treatment was resumed with bismuth and Acetylarsan was introduced in the second post-icteric course. During the first course (bismuth only) he complained of abdominal pains and diarrhoea about three weeks after the course had commenced. Further progress was satisfactory and he was transferred to another clinic in 1945.

Case No. E.557. Age 35. Lorry driver.

Admitted on 22.9.43. as a case of Sero-positive primary syphilis.

Treatment prior to the onset of jaundice consisted of 4.8 gm. Novarsenobillon and 2.8 gm. bismuth.

The jaundice appeared 25 days after the tenth injection of the first course and 90 days from the beginning of treatment. Four days before the onset he noticed that his urine was "dark". The jaundice was moderately severe, bile was found in the urine and the icteric index was 83. Admission to the ward was refused and the duration of the attack was 17 days. He had some carious teeth.

He was instructed about diet and given one injection of 40 c.c. glucose solution intravenously and 30 mgm. Vitamen B_1 intramuscularly. Five intravenous injections (once daily) of 10 c.c. dehydrocholin were also administered.

Anti-syphilitic treatment was resumed, with Bisantol 14 days after the end of the jaundice and Acetylarsan was introduced one month later. The latter caused a mild dermatitis and was withdrawn but was given again shortly after the dermatitis had cleared up. Further progress was satisfactory.

Case No. E.704. Age 64. Joiner.

Admitted on 15.10.43. as a case of Tabes dorsalis.

Anti-syphilitic therapy prior to jaundice consisted of 25 gm. Tryparsamide and 2.5 gm bismuth.

Icterus appeared 20 days after the third injection and 140 days from the beginning of treatment. Two weeks before the onset he had severe rheumatic pains in the shoulders associated with nausea. The jaundice was moderately severe, bile was found in the urine and the icteric index was 111 (later 166). He was admitted to the ward for 32 days. Two weeks after admission the liver was moderately enlarged and the spleen was palpable. The duration of the disease was 60 days.

Diet and glucose orally (5 ounzes daily) insulin (10 units twice daily) and ascorbic acid (50 mgm. twice daily) were prescribed. The insulin was withdrawn after one week on account of intolerance.

Bismuth therapy was resumed 105 days after the disappearance of jaundice and Acetylarsan was introduced one month later. Further progress was satisfactory.

Case No. E.705. Age 37. Shop keeper.

Admitted on 15.10.43. as a case of Latent syphilis.

Prior to the onset of jaundice he received 3.9 gm. arsenic (Novarsenobillon, Neokharsivan) and 4.5 gm. bismuth.

Icterus appeared 66 days after the fifth injection of the second course and 216 days from the beginning of treatment. Two months before onset he complained of stiffness behind the knees which lasted for three weeks. The jaundice was marked and accompanied by nausea. The stools were pale, the urine contained bile, and the icteric index was 83. He refused admission to the ward. The duration of the disease was 27 days.

Diet, saline purgatives and yeast tablets were prescribed. Three glucose "drips" and two injections of dehydrocholin (10 c.c.) were given intravenously.

Bismuth injections were resumed 40 days after the disappearance of jaundice, but he defaulted after the second injection.

Case No. E.794. Age 31. Miner.

Admitted on 30.10.43. as a case of Latent syphilis.

Prior to jaundice he received 2.55 gm. Stabilarsan and 2.2 gm bismuth.

Icterus developed one week after the seventh injection of the first course and 77 days from the beginning of treatment. The jaundice had been present for two weeks before he reported. He was still jaundiced and the icteric index was 46 (later 100). He was admitted to the ward for 14 days and the duration of the attack was 45 days.

He was put on diet. Glucose orally (5 ounzes) insulin (10 units twice daily) and ascorbic acid (50 mgm twice daily) were given, but insulin was withdrawn after eight days on account of intolerance. Yeast tablets and hot baths nightly were also prescribed.

Immediately jaundice subsided colloidal iodine (10 c.c. intravenously) was given once weekly for two weeks and then he left the clinic. Eventually he reported back and bismuth therapy was resumed 147 days after the disappearance of jaundice. Tryparsamide was introduced later and he progressed satisfactorily until he defaulted in 1944.

Case No. E.852. Age 67. Labourer.

Admitted on 12.11.43. as a case of Tertiary syphilis (gumma).

Treatment prior to jaundice consisted of Bisantol only. The total dosage given was 19 c.c.

Icterus appeared 27 days after the twelfth (last) injection of the first course and 96 days from the beginning of treatment. The jaundice was moderately severe and bile was found in the urine. Admission to the ward was refused. He defaulted after this visit for two months. The duration of the attack was uncertain.

Diet, saline purgatives, Mist. Jaund. Co., and iodides were prescribed.

When he reported back two months later the jaundice had disappeared but he was found to be suffering from congestive heart failure and he was admitted to the ward for treatment. A mild course of bismuth was commenced three months later and further progress was satisfactory.

Case No. E.902. Age 49. Labourer.

Admitted on 23.11.43. as a case of Sero-positive primary syphilis.

Prior to the onset of jaundice he was given Neoka-larsine only. The total dosage was 0.36 gm.

Icterus appeared 38 days after the fifth injection of the first course and 55 days from the beginning of treatment. There was a complaint of lassitude and muscular stiffness about 5 weeks before the onset of jaundice. A history of alcohol was obtained. The onset was associated with marked fatigue, bile was found in the urine and the icteric index was 100 (later 166). Nine days afterwards there was tenderness over the liver which was two finger breadth's below the costal margin. The urine contained crystals of leucin and tyrosin. The spleen was not palpable but radiological examination revealed moderate enlargement. He was admitted to the ward for 25 days and the duration of jaundice was 40 days.

Diet and glucose orally (5 ounzes daily) insulin (10 units twice daily) and ascorbic acid (50 mgm twice daily) were prescribed. He had nausea with the glucose and this was withheld for a few days. Two weeks after admission he received hot baths nightly.

Anti-syphilitic treatment was resumed with bismuth 10 days after the disappearance of jaundice, but he defaulted after the first injection.

Case No. E.1281. Age 22. Miner.

Admitted on 22.2.44. as a case of Sero-negative primary syphilis.

Treatment prior to jaundice consisted of 1.05 gm Neohalarsine, 18 c.c. Acetylarsan and 1.6 gm bismuth.

Icterus developed 8 days after the ninth injection of the second course and 201 days from the beginning of treatment. The onset was accompanied by nausea, the urine contained bile and the icteric index was 31. His teeth were poor. (Five months before he had had nausea and headache. Bile was found in the urine but no jaundice had developed). He was admitted to the ward for 12 days and the duration of jaundice was 18 days.

Special diet, one intravenous infusions (300 c.c.) of glucose solution, glucose orally (5 ounzes daily) yeast tablets and ascorbic acid tablets (25 mgm. thrice daily) were prescribed.

Antisyphilitic treatment was resumed with bismuth 38 days after the end of the attack and Acetylarsan was introduced one week later. Further progress was satisfactory.

Case No. E.1042. Age 22. A.B., Royal Navy.

Admitted on 22.4.43. as a case of Sero-negative primary syphilis.

Prior to jaundice he was given 3.0 gm. Novarsenobillon and 2.8 gm bismuth. The first two courses of treatment were given before he came to the clinic (no details of dosages available).

Icterus appeared 7 days after the first injection of the fourth course and about 10 months from the commencement of therapy. Bile was detected in the urine and the icteric index rose to 42. He was admitted to the ward for 17 days which was the duration of the jaundice. His teeth were poor.

Diet and Vitamen B_1 (30 mgm. intramuscularly once daily for 5 days) were prescribed.

Bisantol injections were restarted 20 days after the disappearance of jaundice and Acetylarsan was introduced two months later. He progressed favourably but defaulted from treatment in 1944.

Case No. E.1119. Age 41. Motor driver.

Admitted on 12.1.44. as a case of Sero-negative primary syphilis.

Prior to the onset of jaundice he was given 1.0 gm. Mapharside and 2.9 gm bismuth. Vitamen C (100 mgm intramuscularly) was given with each injection.

Jaundice appeared 21 days after the eleventh (last) injection of the first course and 98 days from the beginning of treatment. A history of alcohol was obtained. He had developed a toxic rash one month before onset. The urine contained bile and the icteric index rose to 143. There was no hepatic enlargement. The duration was 42 days.

Diet and yeast were prescribed, Four intravenous infusions (800 c.c.) of glucose solution, intramuscular injections of Vitamen C (100 mgm) and Vitamen B_1 (30 mgms) and intravenous injections of dehydrocholin (10 c.c.) were also given.

Bismuth injections were resumed 35 days after the disappearance of jaundice and Acetylarsan was introduced in the second post-icteric course.

Progress was satisfactory.

Case No. E.1162. Age 57. Brush maker.

Admitted on 6.10.41. as a case of Sero-negative primary syphilis.

Treatment prior to the onset of icterus consisted of 3.45 gm Neokharsivan and 1.5 gm bismuth.

Icterus developed 57 days after the ninth injection of the first course and 107 days from the commencement of treatment. A history of alcohol was obe tained. Several septic teeth had been removed just before jaundice appeared. One day before onset blood was present in the urine but did not recur. The icterus was at first mild, the urine contained a little bile and the icteric index was 53. He refused admission to the ward, but came in four days later when worsening of his condition occurred. The icteric index rose to 133. Two weeks after admission the liver was two finger breadth's below the costal margin, but was not tender. No splenic enlargement was detected. He had a high temperature on admission, which lasted for three days. The specific agglutination test for Weil's disease was negative. He remained in the ward 22 days and the duration of jaundice was 41 days.

Diet, cascara sagrada and six intravenous infusions of glucose (20%) solution were prescribed.

Antisyphilitic treatment was resumed with Bisantol 3 days after the disappearance of jaundice and Acetylarsan was given six months later, succeeded by Stabilarsan in the following course. Progress was satisfactory.

Case No. E.1208. Age 22. Donkey-man.

Admitted on 7.2.44. as a case of Sero-negative primary syphilis.

Anti-syphilitic treatment prior to the onset of jaundice consisted of 0.5 gm. Neohalarsine and 0.9 gm bismuth given at the clinic and followed by 0.66 gm. Mapharside and 0.2 bismuth at another clinic.

Icterus developed 8 days after the last injection of the first course and 47 days from the beginning of treatment. There was a history of alcohol. Bile was found in the urine and the icteric index rose to 36. He was admitted to the ward for 13 days and the duration of the disease was approximately 16 days as he was transferred temporarily on leaving the ward.

Diet, glucose orally (5 ounzes daily) yeast tablets and ascorbic acid tablets were prescribed.

Shortly after leaving the ward he apparently received trivalent arsenic and bismuth. On returning to the clinic four months later bismuth only was continued and Acetylarsan was introduced within one month. Progress was favourable until he was transferred again in 1945.

Case NO. E.1651. Age 48. Sign writer.

Admitted on 13.4.40. as a case of Latent syphilis.

Prior to the onset of jaundice he received 3.6 gm. Stabilarsan and 1.5 gm. bismuth.

Icterus appeared 21 days after the twelfth (last) injection of the first course and within 95 days of the beginning of treatment. Three weeks before the onset he complained of pain and stiffness in the joints of the upper limbs and developed an erythema of both arms. When he reported with jaundice, bile was found in the urine and the icteric index was 66 (later 100). There was no hepatic enlargement. The duration of the disease was 35 days. His teeth were bad. He was instructed about diet and told to leave his work and rest at home for one week. Ascorbic acid tablets (six daily) were prescribed.

Bismuth injections were resumed 42 days after the disappearance of icterus and Acetylarsan was introduced later followed by Novarsenobillon. Jaundice developed again about 10 months after the previous attack. The urine contained bile and the icteric index was 29. The attack lasted 25 days. Vitamen C, calcium laevulonate and sodium thiosulphate were given. Anti-syphilitic therapy was resumed with Neocardyl 38 days after the disappearance of icterus and he received Acetylarsan three months later. Progress was satisfactory until he defaulted in 1942.

Case No. E.1692. Age 37. Motor driver.

Admitted on 10.6.44. as a case of Latent syphilis.

Prior to the appearance of jaundice he received 0.66 gm. Mapharside and 3.6 gm. bismuth.

Icterus developed 7 days after the eighth injection of the second course and 246 days from the beginning of treatment. One month before the onset of jaundice he developed an arsenical dermatitis of the forearms, thighs, abdomen and buttocks. When jaundice appeared, bile was found in the urine, the stools were pale and the icteric index was 125. He was admitted to the ward for 12 days. Three days after admission the liver was two finger-breadth's below the costal margin. The stools regained their normal colour ten days after the onset. The duration of icterus was 18 days.

Special diet, one intravenous "drip" of 20% glucose (1,200 c.c.), glucose orally, Vitamen C tablets and yeast tablets were prescribed.

Bismuth therapy was resumed 54 days after the disappearance of jaundice. He progressed favourably until he was transferred to another clinic after the fourth injection.

Case No. E.1963. Age 42. Oil worker.

Admitted on 23.8.44. as a case of Secondary syphilis.

Prior to the onset of jaundice he received 0.75 gm. Stabilarsan and 0.9 gm bismuth.

Icterus appeared 110 days after the tenth injection of the first course and 136 days from the beginning of treatment. There was a history of alcohol. He had had a large boil on the forearm one month before onset. The onset was accompanied by nausea, the stools were pale and he was constipated. There was no hepatic tenderness or enlargement and no splenic enlargement. The urine contained bile and the icteric index was 50. He was admitted to the ward for 34 days. Nine days later the liver was enlarged to four finger breadth's below the costal margin, but no tenderness was present. There was a little free fluid in the abdomen and epigastric pain developed two days later. One month after admission the liver was two and a half finger breadth's below the costal margin and no ascites was detectable. Ammonium urate and uric acid crystals were found in the urine but no crystals of leucin or tyrosin were present. Duration: 38 days.

Special diet, four intravenous infusions of 20% glucose and glucose orally ad lib. were prescribed.

He progressed favourably but anti-syphilitic therapy was not restarted for several months.

Case No. E.2084. Age 33. Private, Army.

Admitted on 27.9.44. as a case of Tabo-paresis.

Anti-syphilitic therapy prior to the onset of jaundice consisted of 0.22 gm. Mapharside and 1.2 gm. bismuth.

The jaundice appeared 7 days after the sixth injection of the first course and 50 days from the beginning of treatment. One week before onset there was a very faint tinge in the conjunctivae and the icteric index was 13. The jaundice was mild, the urine contained a trace of bile and the icteric index did not rise above 16. He was admitted to the ward for 13 days and the duration of jaundice was 14 days.

Diet, one intravenous infusion of glucose (800 c.c) and yeast tablets were prescribed.

Bismuth injections were resumed two days before the end of jaundice and after the third injection he received eight sessions of inductopyrexia. Bismuth only was continued after this and he progressed satisfactorily.

SECTION B. FEMALES.

Case No.A.2765. Age.46. Occupation not recorded.

Admitted on 28.9.45. as a case of Tertiary Syphilis (Gumma)

Prior to the onset of jaundice she was given 5.4 gm. trivalent arsenic (Neokharsivan,Kharsulphan), 23.5 gm. Tryparsamide, 28 c.c. Acetylarsan and 9.9 gm. bismuth.

The jaundice developed 16 days after the first injection of the sixth course and three years and two months from the commencement of therapy. Two weeks before onset she had pains in the right side. The jaundice was marked and she attended her own doctor for treatment. The duration of the attack was uncertain. She had several bad teeth.

Approximately one month after the end of the attack antisyphilitic treatment was resumed with Bisantol and Tryparsamide was introduced one year later.

Further progress was satisfactory.

Case No. A.3396. Age 46. Occupation not recorded.

Admitted on 10.10.36. as a case of tertiary syphilis.

Prior to jaundice she received 120 gm. trypar-samide and 8.0 gm. bismuth. The second to the seventh courses were given at another clinic.

The jaundice appeared 28 days after the sixth injection of the ninth course and four and a half years from the beginning of treatment. She had nausea during the month preceding the attack. The jaundice was slight at first and accompanied by nausea. Two weeks later she was worse and was admitted to the ward for 34 days. Nausea was still present. The stools were pale and she complained of neuritic pains in the leg. The duration was 56 days.

A low fat diet, saline purgatives, Felamine and intramuscular injections of Vitamen B_1 were prescribed.

Seven days after the disappearance of icterus bismuth injections were resumed but she developed purpura seven weeks later. Fivemonths later Bisoxyl was given and succeeded by Bisglucol. Just prior to resuming anti-syphilitic therapy after the attack of jaundice a radiological examination of the gall-bladder was carried out but was negative.

Further progress was satisfactory.

Case No.A.3484. Age.50. Housekeeper.

Admitted on 2.11.36. as a case of Tertiary syphilis.

Treatment prior to jaundice consisted of 77 c.c. Acetylarsan and 14.75 gm. bismuth. (Bisglucol, Bisantol, Neocardyl).

Jaundice appeared 27 days after the sixteenth(last) injection of the seventh course and five years and nine months from the beginning of treatment. Icterus developed during the "rest period" following the last course and she was admitted to another hospital for treatment.

About three months later antisyphilitic therapy was recommenced with Bisglucol and Acetylarsan was introduced two years later. Progress was satisfactory until she defaulted in 1945.

Case No.A.3640. Age.39. Occupation not recorded.

Admitted on 6.3.38. as a case of Congenital Syphilis.

Prior to jaundice she received 9.6 gm.trivalent arsenic (Kharsulphan, Neokharsivan), 53.c.c. Acetylarsan and 10.59 gm. bismuth. (Bisglucol,Bicreol, and Bisantol).

Icterus appeared 11 days after the second injection of the fifth course and 99 days from the beginning of treatment. One month before the onset she developed a rash on the arms and legs and three weeks later had "rheumatic pains all over". The onset of jaundice was associated with Herpes Zoster. She was referred to her own doctor for treatment. The duration of the attack was 31 days.

Antisyphilitic treatment was resumed 84 days after the disappearance of jaundice and Bisglucol was introduced two months later.

She progressed satisfactorily.

Case No.A.3975. Age.28. Occupation not recorded.

Admitted on 27.9.37 for prophylactic treatment during pregnancy as her husband was suffering from Secondary syphilis.

Prior to jaundice she received 5.85 gm. trivalent arsenic (Neokharsivan, Kharsulphan), 21 c.c.Acetyl-arsan and 3.0 Bismuth.

The jaundice developed 7 days after the seventh injection of the third course and 284 days from the beginning of treatment. When she reported the jaundice had already been present for one week. She complained of backache and pains in the knees. The approximate duration of the disease was 21 days.

She was instructed about diet, and calomel, followed by a saline purgative, was prescribed.

Prophylactic therapy was resumed with Bisantol 77 days after the attack of jaundice. She progressed satisfactorily and was discharged in 1938.

Case No.A.4160. Age.49. Housewife.

Admitted on 29.12.37. as a case of Latent Syphilis.

Antisyphilitic therapy prior to the onset of jaundice consisted of 53 c.c. Acetylarsan, 6.4 gm. Stabilarsan and 10.84 gm. bismuth (Bisglucol,Bisantol).

The jaundice developed one month after the twentieth (last) injection of the tenth course and four years and four months from the beginning of treatment. The onset was associated with nausea and she had been admitted to a medical ward for two weeks. The duration was uncertain.

About two months later bismuth injections were resumed and Acetylarsan was introduced a year later. Further progress was satisfactory.

Case No.A.4204. Age.26. Housewife.

Admitted on 15.1.38. as a case of Latent Syphilis.

Prior to jaundice she received 3.15 gm. Neokharsivan, 68c.c. Acetylarsan and 7.27 gm. bismuth (Bisglucol, Bisantol).

Icterus appeared 7 days after the tenth injection of the fourth course and one year and seven months from the beginning of treatment. Four days before onset she had pains in the limbs. When she reported she stated that she had been in bed for three weeks with a severe attack of jaundice and had received treatment from her own doctor. A trace of icterus was still present and she was advised about diet and ordered saline purgatives. The duration of the attack was 42 days.

Injections of Bisantol were restarted 44 days after the attack of jaundice had ended.

Further progress was satisfactory.

Case No.A.4439. Age.27. Housewife.

Admitted on 11.5.38. as a case of Latent Syphilis.

Prior to the onset of jaundice she received 3.6 gm. Stabilarsan and 20 c.c. Bisantol.

The icterus appeared 35 days after the first injection of the second course and 203 days from the beginning of treatment. At the time of onset of jaundice she was 3½ months pregnant. The jaundice was very mild and lasted 5 days. Her teeth were in a poor condition.

She was advised about diet and received Thiostab intravenously on two occassions.

Bismuth injections were resumed 51 days after the disappearance of jaundice. Acetylarsan was given later. Progress was satisfactory.

Case No.A.4532. Age.52. Housewife.

Admitted on 28.6.38. as a case of Secondary Syphilis.

Prior to the onset of jaundice she was given 4.05 gm. Stabilarsan, 3 c.c. Acetylarsan and 3.09 bismuth.

Icterus developed 21 days after the second injection of the second course and 184 days from the commencement of therapy. During the three weeks preceding the onset she had been confined to bed with "depression" and pains in the back and limbs. The onset of jaundice was mild and associated with nausea. She was referred to her own doctor who reported later that the jaundice had become severe. The duration was 49 days.

Anti-syphilitic treatment was resumed with Bisantol 21 days after the disappearance of jaundice. Bisglucol was given in the second post-icteric course and Acetylarsan was introduced three months later. She progressed satisfactorily and was discharged in 1941.

Case No.A.4973. Age.29. Housewife.

Admitted on 9.3.39. as a case of Tertiary Syphilis.

Antisyphilitic therapy prior to the appearance of jaundice consisted of 4.35 gm. Stabilarsan, 48 c.c. Acetylarsan and 7.14 gm. bismuth. (Bisglucol and Bisantol).

The jaundice developed 10 days after the fifth course and 202 days from the beginning of treatment. Ten days before onset she complained of "cramp" and one week later had nausea and depression. The onset of jaundice was accompanied by nausea and epigastric pains. She was admitted to the ward for 12 days which was the duration of the attack. She had some carious teeth. She developed a dermatitis on the legs one month before the jaundice.

A fat-free diet, saline purgatives and Pelamine (one tablet thrice daily) were prescribed.

She defaulted on leaving the ward but returned about four months later. A course of Bisantol was given and Bisglucol was substituted for this later. Progress was satisfactory and she was discharged in 1943.

Case No.A.5224. Age.39. Housewife.

Admitted on 28.7.39. as a case of Tertiary Syphilis.

Prior to the development of jaundice she received $12\frac{1}{2}$ c.c. Bisantol and 2 c.c. Neocardyl only.

Icterus appeared 79 days after the fifteenth (last) injection of the first course and 216 days from the beginning of treatment. A history of alcohol was obtained. A few days before jaundice appeared her husband reported that she had nausea, anorexia, and headaches and was "drinking a lot". When admitted she was found to have an extensive consolidation of the lower part of the right lung associated with jaundice. The lower margin of the liver was just palpable. She was put on a low fat diet. Three weeks later the abdomen was distended with fluid and was "tapped" on several occasions subsequently. One month after admission she vomited bile-stained fluid. A month later oedema of the legs appeared and she was given Salyrgan intramuscularly. Epistaxis also occured. The Van den Bergh reaction was direct, weak and delayed. There was no significant change in the red and white cell counts. Four months after admission she left the ward against orders. She died laterin the same month in another hospital.

A post-mortem examination was conducted there and the main findings were syphilitic cirrhosis and a low grade peritonitis and perihepatitis.

Case No.A.5402. Age.24. Clerk.

Admitted on 23.10.39. as a case of Congenital Syphilis.

Prior to the onset of icterus she was given 2.95 gm. Acetylarsan, 74 c.c. Acetylarsan, and 7.46 gm. bismuth, (Bisglucol,Bisantol and Meocardyl).

The jaundice developed 7 days after the tenth injection of the fourth course and one year and three months from the beginning of treatment. During the week preceding the onset she had nausea. At first only tinging of the conjunctivae was present, but the jaundice deepened during the following week. She was admitted to the ward for 9 days . The duration of the attack was 19 days.

A low fat diet, saline purgatives, glucose orally and Felamine tablets were prescribed.

Bismuth injections were started again 30 days after the disappearance of jaundice and two years later Stabilarsan was given.

Further progress was satisfactory.

Case No. A.5554. Age 12. Schoolgirl.

Admitted on 18.1.40. as a case of congenital syphilis.

Treatment before the onset of jaundice consisted of 81 c.c. Acetylarsan, 4.15 gm. Stabilarsan and 5.15 gm. bismuth (Bisglucol, Neocardyl).

The jaundice developed a day or so after the first injection of the seventh course and four years and eight months from the commencement of therapy. When she reported for examination the jaundice had been present for two weeks. Jaundice was still present and the icteric index was 45. Four days afterwards she was admitted to the ward for 13 days. The duration was approximately 34 days.

A low fat diet, saline purgatives, glucose orally and a liberal intake of fluids were prescribed.

Anti-syphilitic treatment was resumed with Bisantol one week after the end of the attack and Acetylarsan (infantile) was introduced within three weeks.

Further progress was satisfactory.

Case No.A.5931. Age.27. Housewife.

Admitted on 17.7.40 as a case of Sero-positive Primary syphilis.

Prior to the onset of jaundice she received 3.75 gm. Stabilarsan and 1.3.gm. bismuth.

The jaundice developed 6 days after the sixth injection of the second course and 122 days from the beginning of treatment. Six days before the onset she developed a rash on the left buttock and four days later urticaria. When she reported again the jaundice had been present for two weeks and only a slight icteric tinge remained. Duration was 34 days.

She was advised about a low fat diet and Redoxon tablets (one thrice daily) were prescribed.

Bismuth injections were resumed 12 days before the disappearance of the jaundice and Acetylarsan was introduced in the second post-icteric course. Progress was satisfactory and she was discharged in 1942.

Case No.A.5739. Age.30. Housewife.

Admitted on 17.4.40. as a case of Meningo-vascular syphilis.

Antisyphilitic treatment before jaundice consisted of 64 c.c. Acetylarsan, 32.5 gm. Tryparsamide and 7.4 gm. bismuth.

Jaundice appeared 7 days after the fifteenth (last) injection of the fourth course and fourteen months from the commencement of therapy. Three weeks before the onset she had nausea, headaches and giddiness. When she reported the icterus had been present for two weeks. She complained of nausea and anorexia and was admitted to the ward on the following day for 11 days. The duration of the attack was 37 days. Her teeth were in poor condition.

A low fat diet and Melamine were prescribed.

Antisyphilitic treatment was resumed with Bisoxyl 12 days after the end of the jaundice and Bisglucol was introduced three months later. Tryparsamide was given five months after this and she was progressing satisfactorily until she was transferred in 1943.

Case No.A.5979. Age.26. Rubber-mill Worker.

Admitted on 12.8.40. as a case of Secondary syphilis.

Treatment prior to jaundice consisted of 6.45.gm. Stabilarsan and 3.45 gm. bismuth.

Icterus appeared 35 days after the fifteenth (last) injection of the second course and 258 days from the commencement of treatment. During the week preceding the onset epigastric pain and occasional vomiting occured. The jaundice was marked and she was admitted to the ward on the following day for 21 days. The duration of the attack was 24 days. She had severe pyorrhoea.

A low fat diet and saline purgatives and Pelamine were prescribed.

Immediately the jaundice cleared up bismuth injections were resumed. Acetylarsan was given one year later. Progress was satisfactory until she defaulted in 1943.

Case No.A.6101. Age.40. Housewife.

Admitted on 7.10.40. as a case of Secondary Syphilis.

She received the first course of antisyphilitic treatment before coming to the clinic. Treatment was continued and the total dosages prior to the onset of jaundice were 6.45 gm. Stabilarsan, 10.c.c. Chlorostab, and 0.4 gm. Bisglucol.

The jaundice appeared 7 days after the second injection of the second course and 3 months from the beginning of therapy. There was nausea and occasional vomiting during the two weeks preceding the onset of the attack. The duration of the attack was 37 days.

A low fat diet, saline purgatives, glucose drinks and Felamine tablets were prescribed.

One week before the jaundice disappeared anti-syphilitic treatment was resumed with Bisglucol and Acetylarsan was introduced four months later.

She progressed satisfactorily and was discharged in 1943.

Case No.A.6114. Age.25. Housewife.

Admitted on 9.10.40 as a case of Latent Syphilis.

Prior to the onset of jaundice she received 5.2 gm. Stabilarsan and 2.8 gm. bismuth.

Icterus appeared 75 days after the eleventh (last) injection of the third course and one year and three months from the beginning of treatment. The jaundice was severe and ran a prolonged course of 66 days.

She was advised about a low fat diet. Glucose orally and saline purgatives were prescribed.

Bismuth therapy was resumed after the disappearance of jaundice and Acetylarsan was introduced one year later.

Further progress was uneventful.

Case No.A.6116. Age.19. Bus Conductress.

Admitted on 9.10.40. as a case of Secondary Syphilis.

Antisyphilitic treatment prior to the appearance of jaundice consisted of 7.65 gm. Stabilarsan, 4.c.c. Acetylarsan and 5.15 gm. bismuth. (Bisglucol,Neocardyl).

Icterus developed 4 days after the sixth injection of the second course and 201 days from the beginning of treatment. During the four days preceding the onset she had rheumatic pains. The jaundice was relatively mild but ran a prolonged course of over 42 days. She had several bad teeth.

She was given a diet sheet. Saline purgatives, glucose orally and Felamine tablets were prescribed.

Immediately the icterus disappeared antisyphilitic treatment was resumed with Bisoxyl. One year later Stabilarsan was given and she was discharged in 1943 after satisfactory progress.

Case No.A.6252. Age.26. Typist.

Admitted on 10.12.40. as a case of Congenital Syphilis.

Prior to jaundice she received 1.35 gm. Stabilarsan,46 gm. Tryparsamide, 43 c.c. Acetylarsan and 11.95 gm. bismuth.

The jaundice developed 30 days after the thirteenth (Last) injection of the eight course and two years and seven months from the beginning of treatment.

One week before the onset she had generalized muscular pains, anorexia and generalized fatigue. She received part of her treatment from her own doctor. The duration was 75 days.

Two weeks after the end of jaundice antisyphilitic treatment was resumed with Stabilarsan and bismuth.

Further progress was satisfactory.

Case No.A.6254. Age.35. Unemployed.

Admitted on 10.12.40. as a case of Secondary Syphilis.

Prior to jaundice she received 3.2.gm. Stabil-arsan and 2.2. gm. bismuth.

The jaundice developed about twelve days after the fourth injection of the second course and 185 days from the commencement of therapy. On reporting she stated that the jaundice had been present for 3 weeks and she had received treatment from her own doctor. It had been accompanied bynausea. A trace of icterus was still present, but the nausea had gone. She was advised to continue with a low fat diet but defaulted for eight months. She had had her teeth extracted (because of severe pyorrhoea) five months before the jaundice.

Eight months after the attack of jaundice anti-syphilitic therapy was resumed with Acetylarsan and Neocardyl. One year later Novarsenobillon was given and progress was satisfactory until she defaulted in 1944.

Case No.A.6428. Age.20. Housewife.

Admitted on 6.3.41. as a case of Congenital Syphilis.

Antisyphilitic therapy prior to jaundice consisted of 10.6 gm. (Stabilarsan, Neokharsivan) and 7.0 gm. bismuth. Part of this treatment was given at other clinics.

Icterus appeared about a week after the last injection and two and a half years from the beginning of treatment. Two months before the onset she had enteritis. When she reported she stated that the jaundice had been present for three to four weeks and she had been in bed for one week. A trace of icterus in the conjuncture was still present. (Her sister (A.8256) also had an attack of jaundice about the same time). The duration was 40 days.

Her teeth were poor. Diet was advised.

Two weeks before the end of jaundice antisyphilitic treatment was resumed with bismuth. Stabilarsan was introduced in the third post-icteric course and further progress was satisfactory.

Case No.A.6484. Age.38. Housewife.

Admitted on 2.4.41. as a case of Syphilitic Meningo-Myelitis.

Prior to the onset of jaundice she received 80 gm. Tryparsamide, 54 c.c. Acetylarsan and 8.1 gm.bismuth (Bisglucol, Neocardyl). She had been given two courses of treatment (dosage unknown) before coming to the clinic.

Jaundice developed one month after the fifteenth (last) injection of the seventh course and twenty months from the commencement of therapy. She had had diarrhoea one month before the onset. She had several bad teeth. She sent a letter saying that she was suffering from jaundice and was receiving treatment from her own doctor. When she reported for examination eight days later a slight degree of icterus was still present. The duration was 25 days. She was advised to continue on a low fat diet.

Bismuth injections were resumed 20 days after the disappearance of jaundice and Acetylarsan was introduced after the fourth injection. Tryparsamide was given eight months later and she progressed satisfactorily.

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Case No.6520. Age.35. Housewife.

Admitted on 18.4.41. as a case of Congenital Syphilis.

Prior to the onset of jaundice she received 5.65 gm. arsenic (Stabilarsan,Neokharsivan), 4.2 gm. Bisglucol and 11 c.c. Bisantol.

The jaundice developed one day after the sixth injection of the second course and eighteen months from the beginning of treatment. During the week preceding onset she had nausea and muscular stiffness. When she reported the jaundice had been present for three days. Two days later she was admitted to the ward for 10 days. The duration of the attack was 17 days.

A low fat diet was prescribed.

She progressed favourably and was transferred to another clinic before anti-syphilitic treatment was resumed.

Case No.A.6560. Age.42. Housewife.

Admitted on 8.5.41. as a case of Latent Syphilis.

Prior to jaundice she received 2.5 gm. Stabilarsan 81 c.c. Acetylarsan and 9.35 gm. bismuth. (Bisglucol, Neocardyl).

Icterus appeared 14 days after the thirteenth injection of the seventh course and within two years and five months of the beginning of treatment. The onset was accompanied by anorexia. The disease ran a relatively mild but prolonged course lasting 63 days. Diet was advised.

Antisyphilitic treatment was resumed with Bisantol 14 days after the end of the attack and Acetylarsan was introduced one month afterwards.

Progress was satisfactory.

Case No. A. 6579. Age 34. Governess.

Admitted on 13.5.41. as a case of Tertiary Syphilis.

Prior to jaundice she received 3.7 gm. Stabilarsan, 17 c.c. Acetylarsan and 3.54 gm. bismuth.

The jaundice developed one week after the eleventh injection of the second course and 216 days from the beginning of treatment. She notified the clinic by letter that she had jaundice. Instructions about a low fat diet were sent and Felamine was prescribed. She had a varicose ulcer of the right leg. Two months later a note was received stating that the jaundice had improved but that her general condition had declined and she had died of pneumonia.

Case No.A.6640. Age.26. Housewife.

Admitted on 16.6.41. as a case of Sero-negative primary syphilis.

Antisyphilitic treatment prior to jaundice consisted of 2.25 gm. arsenic (Stabilarsan, Neokharsivan) and 3.2 gm. bismuth.

The jaundice appeared 12 days after the fourth injection of the second course and 246 days from the beginning of treatment. During the week preceding onset she complained of anorexia and a "heavy feeling". When she reported the jaundice had been present for four days and she still had anorexia. She was fairly deeply jaundiced and the disease lasted 46 days.

A low fat diet was advised. Glucose orally, saline purgatives and a liberal daily intake of fluids were prescribed.

Bismuth injections were resumed immediately the jaundice disappeared. Acetylarsan was introduced five months later. She later received Stabilarsan and progressed favourably.

Case No. A.6693. Age 20. Telephonist.

Admitted on 14.7.41. as a case of tertiary syphilis.

Treatment before the appearance of icterus consisted of 2.55 gm. trivalent arsenic (Stabilarsan, Neokharsivan, Novarsenobillon) 2 c.c. Acetylarsan and 0.87 gm. bismuth (Bisglucol and Neocardyl).

The jaundice developed 17 days after the second injection of the second course and 122 days from the commencement of therapy. She had nausea during the two days immediately preceding the onset of the attack. The disease ran a relatively mild but prolonged course the duration being 77 days. Pyorrhoea was present.

Diet, glucose orally and Pelamine tablets were prescribed.

Bismuth therapy was resumed 28 days after the disappearance of jaundice and Stabilarsan was introduced within ten months. She progressed satisfactorily until transferred to another clinic in 1945.

Case No. A.6743. Age 53. Canteen Assistant.

Admitted on 8.8.41. as a case of Secondary syphilis.

Prior to the onset of jaundice she received 4.85 gm Neokharsivan, 3.9 gm. Bisglucol and 3.5 c.c. Bisoxyl.

Icterus appeared 14 days after the tenth injection of the second course and 156 days from the beginning of treatment. She received treatment from her own doctor. The duration of the jaundice was 25 days. She had an attack of dermatitis two months before the jaundice.

Anti-syphilitic therapy was resumed with Bisoxyl 10 days after the disappearance of icterus and Acetylarsan was introduced in the second post-icteric course. Stabilarsan was given in the third course without ill effect and she progressed satisfactorily.

Case No.A.6805. Age.34. Unemployed.

Admitted on 4.9.41. as a case of Sero-positive Primary syphilis.

Treatment prior to jaundice consisted of 7.55 gm. arsenic (Neokharsivan, Stabilarsan) and 4.0 gm.bismuth.

Icterus appeared about 8 months after the beginning of treatment and followed the fifteenth(last) injection of the second course. Shortly after the completion of this course a letter was received from a London hospital stating that she had been admitted with a toxic jaundice. Her general condition was poor but she was showing signs of improvement. She did not report to the clinic again.

Case No.A.6814. Age.20. Occupation not recorded.

Admitted on 10.9.41. as a case of Congenital Syphilis.

Prior to jaundice she received 13.95 gm.Trivalent arsenic, 60 c.c. Acetylarsan and 20.37 gm. bismuth. (Bisglucol and Neocardyl). Treatment had been started before she came to the clinic.

The jaundice developed about 89 days after the fifteenth (last) injection of the third course and within two years of the commencement of therapy.

The treatment for jaundice was begun by her doctor and she was then admitted to the ward. There was vomiting and epigastric pain. She was in the ward for 24 days and the duration of the attack was 25 days. The teeth were in poor condition. A low fat diet and Felamine tablets were prescribed.

Bismuth injections were restarted 103 days after the end of jaundice and Stabilarsan was introduced seven months later.

Progress was satisfactory.

Case No.A.6904. Age.42. Housewife.

Admitted on 21.10.41. as a case of Latent Syphilis.

Treatment before jaundice consisted of 0.45 gm. Neokharsivan and 0.3 gm. bismuth.

Jaundice developed 14 days after the second injection of the first course and within 21 days of the beginning of therapy. Two to three weeks before the jaundice she felt "feverish" for a few days. The jaundice was treated by her own doctor and the duration was uncertain. She said there were "at least two cases of jaundice in the village at the same time".

Bismuth injections were resumed about four months after the attack of jaundice. She later received Acetylarsan and Stabilarsan and progressed satisfactorily.

Case No.A.7014. Age.19. Machinist.

Admitted on 8.12.41. as a case of Congenital Syphilis.

She received 48 c.c. Acetylarsan and 3.2 gm. bismuth in the clinic prior to jaundice. (From 1932 to 1939 she had been under treatment at another clinic).

The jaundice appeared 165 days after the seventeenth (Last) injection of the first course and 385 days from the beginning of treatment. When she reported no jaundice was found but she said that she had been in bed one week with it and had been treated by her doctor.

Antisyphilitic treatment was resumed with Bisantol 14 days after the disappearance of jaundice. Progress was satisfactory until she defaulted after the thirteenth injection.

Case No. A.7130. Age 26. Housewife.

Admitted on 13.2.42. as a case of Secondary syphilis.

Prior to the onset of jaundice she received 0.6 gm. Neokharsivan, 34 c.c. Acetylarsan and 2.6 gm. bismuth.

The icterus appeared 14 days after the eighth injection of the second course and 136 days from the beginning of treatment. She developed an arsenical dermatitis two weeks before the onset of jaundice. The jaundice was mild and lasted 25 days. She had several very carious teeth.

Diet, glucose orally, and saline purgatives were prescribed.

As soon as icterus disappeared bismuth therapy was resumed. Stabilarsan was not introduced for two years. Further progress was satisfactory.

Case No. A.7204. Age 25. Occupation Not Recorded.

Admitted on 12.3.42. as a case of Latent Syphilis.

Prior to jaundice she received 9.7 gm. arsenic (Stabilarsan, Neokharsivan) and 6.1 gm. bismuth. Treatment had commenced before she came to the clinic.

Icterus appeared about four days after the second injection of the third course and within six months of the beginning of treatment. One month before onset she had pain in the side. When she eventually reported the jaundice had been present for two weeks and she was receiving treatment from her doctor. She was still jaundiced but refused admission to the ward. The icteric index was 53. The duration of the attack was 66 days.

Bismuth injections were resumed 41 days before the final disappearance of jaundice and Acetylarsan was introduced three months later.

Further progress was satisfactory.

Case No.A.7217. Age. 36. Housewife.

Admitted on 23.2.42. as a case of **G.P.I.**

Treatment before jaundice consisted of 7 gm. Tryparsamide, 13 c.c. Acetylarsan and 1.75 gm.bismuth (Bisglucol, Neo-cardyl).

Icterus appeared 3 days after the seventh injection of the second course and 112 days from the beginning of treatment. She complained of nausea during the three days preceding onset. This continued when the jaundice developed. She was admitted to the ward on the next day for 32 days. The duration of the attack was 33 days.

A special low fat diet and Felamine tablets were prescribed.

Antisyphilitic treatment was resumed with Neocardyl 15 days after the disappearance of jaundice and Tryparsamide was introduced in the second post-icteric course.

Further progress was satisfactory.

Case No.A.7241. Age 21. Housewife.

Admitted on 1.4.42. as a case of Sero-negative primary syphilis.

Prior to jaundice she received 1.95 gm. arsenic (Neokharsivan, Stabilarsan) and 1.5 gm. bismuth.

The jaundice developed about one month after the third injection of the second course and 143 days from the beginning of treatment. She was treated for the jaundice by her own doctor. Onset had been preceeded by headaches. She was confined to bed for two weeks and the duration of the attack was 3 weeks. She had several very carious teeth.

Antisyphilitic treatment was resumed with Acetylarsan about 50 days after the disappearance of jaundice. A recurrence of the syphilis developed after the first injection and she was given Stabilarsan and bismuth.

Further progress was satisfactory.

Case No. A.7430. Age 22. Housewife

Admitted on 4.6.42. as a case of Secondary syphilis.

Treatment had been started before she came to the clinic. This was continued and she received 7.55 gm. Stabilarsan, 25 c.c. Acetylarsan and 5.12 gm. bismuth (Bisglucol and Neo-cardyl).

The jaundice developed about one year after the beginning of treatment and followed the third injection of the second course. When she eventually reported for examination the jaundice had been present for some time but an icteric tinge was still present. Treatment was given by her own doctor. The duration was uncertain.

Bismuth injections were restarted one week before the jaundice disappeared and Novarsenobillon was introduced in the second post-icteric course.

Further progress was satisfactory.

Case No. A.7449. Age 25. Housewife.

Admitted on 16.6.42. as a case of Sero-positive primary syphilis

Prior to the onset of jaundice she received 1.9 gm. Novarsenobillon and 2.85 gm. bismuth.

Icterus appeared 38 days after the fourteenth (last) injection of the first course and 127 days from the beginning of treatment. Two days after the onset she complained of nausea and vomited once. Admission to the ward was refused. The duration was 25 days. She had several very bad teeth associated with pyorrhoea.

She was advised to take a low fat diet and plenty of fluids. Glucose orally was prescribed.

As soon as icterus disappeared anti-syphilitic therapy was resumed with bismuth. Acetylarsan was introduced one month later. Stabilarsan was given six months after this. She progressed satisfactorily and was discharged in 1944.

Case No. A.7566. Age 59. Assistant Cook.

Admitted on 1.8.42. as a case of Secondary syphilis.

She received 4.55 gm. Stabilarsan and 3.0 gm. bismuth before jaundice appeared.

The jaundice developed 56 days after the twentieth (last) injection of the first course and 132 days from the beginning of treatment. The jaundice was marked and she was admitted to the ward for 21 days which was the duration of the attack. Five days after admission a little free fluid was detected in the abdomen.

A low fat diet and Pelamine tablets were prescribed. She also received one injection of Thiostab.

Bismuth therapy was resumed five days before the disappearance of jaundice, but she defaulted after the ninth injection. When she returned over one year later Acetylarsan and bismuth were given. She progressed satisfactorily and was transferred to another clinic in 1944.

Case No. A.7631. Age 30. Housewife.

Admitted on 28.8.42. as a case of Sero-positive Primary syphilis.

Prior to the onset of jaundice she was given 2.4 gm. Novarsenobillon and 1.9 gm. bismuth.

Icterus appeared 11 days after the twelfth injection of the first course and within 82 days from the beginning of treatment. During the four days preceeding onset she complained of nausea. This continued during the early stages of the attack of jaundice and bile was found in the urine. The duration was 10 days. Her teeth were unhealthy.

She was instructed to take a low fat diet and saline purgatives , glucose orally and Pelamine tablets were prescribed.

Immediately jaundice disappeared antisyphilitic treatment was resumed with bismuth, and Stabilarsan (intra-muscularly) was introduced after the fifth injection.

Further progress was satisfactory.

Case No. A.7646. Age 22. Housewife.

Admitted on 3.9.42. as a case of Secondary syphilis.

Prior to jaundice she received 4.95 gm. Neokharsivan and 3.4 gm bismuth.

Icterus developed 7 days after the seventh injection of the second course and 130 days from the commencement of therapy. One week before the onset she complained of nausea and heartburn. The jaundice was mild and lasted 21 days. Her teeth were unsatisfactory.

A low fat diet, saline purgatives, and glucose orally were prescribed. She also received four intravenous injections of Thiostab.

As soon as the attack ended bismuth therapy was resumed and Stabilarsan (intra-muscularly for the first three injections) was introduced in the second post-icteric course.

Further progress was satisfactory.

Case No. A.7666. Age.26. Domestic.

Admitted on 14.9.42. as a case of Secondary Syphilis.

Treatment prior to jaundice consisted of 7.35 gm. arsenic (Novarsenobillon, Neokharsivan) and 3.64 gm. bismuth.(Bisglucol, Bisantol and Neocardyl).

The jaundice developed one day after the twelfth (last) injection of the second course and 192 days from the beginning of treatment. When she reported the jaundice had been present for one week and she was still slightly jaundiced. The approximate duration of the disease was 13 days. She had some carious teeth.

Bismuth injections were resumed about one month after the end of jaundice and Acetylarsan was introduced two months later. She later received Stabilarsan and progressed satisfactorily.

Case No. A.7686. Age 19. Housewife.

Treatment before the appearance of icterus consisted of 7.55 gm. arsenic (Novarsenobillon, Stabilarsan) and 4.03 gm. bismuth (Bisglucol, Bisantol and Neocardyl).

The jaundice developed 6 days after the first injection of the first course and 208 days from the commencement of therapy. The jaundice was mild and the urine contained bile. She was treated by her own doctor and was given three injections of Thiostab in the clini. The duration of the attack was 32 days.

As soon as icterus disappeared bismuth therapy was resumed and Acetylarsan was introduced within one month. Stabilarsan was given in the second post-icteric course. She progressed satisfactorily.

Case No. A.7736. Age 29. Housewife.

Admitted on 8.10.42. as a case of Secondary syphilis.

Treatment prior to jaundice consisted of 1.2 gm Stabilarsan and 0.7 gm bismuth.

Icterus appeared 38 days after the sixth injection of the second course and 82 days from the commencement of therapy. The jaundice was treated by her own doctor. The approximate duration was 23 days She had several bad teeth associated with marked pyorrhoea.

Immediately jaundice disappeared bismuth injections were restarted but she defaulted after the second injection. About three weeks after the first attack jaundice recurred. Treatment was given by her doctor and when she eventually reported no evidence of jaundice was found. Bismuth therapy was again resumed and Stabilarsan was given six months later. Further progress was satisfactory.

Case No. A.7763. Age 33. Housewife.

Admitted on 19.10.42. as a case of Secondary syphilis.

Prior to the onset of jaundice she received 3.45 gm. Neokharsivan and 3.6 gm. bismuth.

Icterus appeared 39 days after the twentieth (last) injection of the first course and 153 days from the beginning of treatment. The onset was preceded by nausea for a few days. She was admitted to the ward for 31 days and the duration of the attack was 34 days. She had carious teeth and pyorrhoea.

A special low fat diet, glucose orally and a liberal intake of fluids were prescribed. Thiostab was administered on three occasions.

Bismuth therapy was resumed four days before the end of the attack and Stabilarsan was introduced four months later. She progressed satisfactorily and was discharged in 1944.

Case No.A.7795. Age.33. Wire worker.

Admitted on 29.10.42. as a case of Tertiary Syphilis.

Treatment prior to jaundice consisted of 1.05 gm. Novarsenobillon and 0.7 gm. bismuth.

Icterus appeared 10 days after the fifth injection of the first course and 32 days from the beginning of treatment. One week before the onset she had a "shiver" and felt nauseated. When she reported with jaundice she was admitted to the ward for 10 days and the duration of the attack was 11 days.

Special low fat diet and Relamine tablets were prescribed. Three intra-venous injections of Thiostab were given.

Bismuth injections were resumed 12 days after the end of jaundice and Acetylarsan was introduced four months later. Stabilarsan was given one year after, and she progressed satisfactorily.

Case No. A.7879. Age 32. Housewife.

Admitted on 1.12.42. as a case of Secondary syphilis.

Anti-syphilitic treatment prior to the onset of jaundice consisted of 5.8 gm. arsenic (Novarsenobillon, Stabilarsan and 5.3 gm. bismuth.

The jaundice developed 7 days after the eleventh injection of the second course and 150 days from the beginning of treatment. During the six days preceding onset she complained of nausea. The jaundice was mild at first, the urine contained bile and the icteric index was 71. It began to deepen and she vomited twice after the onset and complained of anorexia. The duration was 16 days.

She was instructed to take a low fat diet and glucose orally and saline purgatives were prescribed.

Anti-syphilitic therapy was resumed 4 days after the disappearance of icterus with Bisantol. Acetylarsan was introduced five months later. She progressed satisfactorily until she defaulted in 1944.

Case No.A.7895. Age.23. Housewife.

Admitted on 8.12.42. as a case of Latent Syphilis.

Prior to icterus she received 2.6 gm. Stabilarsan and 0.8 gm. bismuth.

The jaundice developed 10 days after the second injection of the second course and 120 days from the beginning of treatment. She had nausea during the three weeks preceding onset. When jaundice appeared bile was found in the urine and she was admitted to the ward for 10 days. The duration of the attack was 15 days. She had slight pyorrhoea.

She was instructed about diet and received three intravenous injections of Thiostab.

Bismuth injections were resumed 14 days after the disappearance of jaundice. Stabilarsan was introduced five months later.

Further progress was satisfactory.

Case No.A.7984. Age.45. Rubber worker.

Admitted on 8.1.43. as a case of Sero-Positive primary syphilis.

Total dosages of antisyphilitic drugs received before the onset of jaundice were 2.6 gm.Stabilarsan and 2.4 gm. bismuth.

Icterus appeared 91 days after the commencement of treatment and followed the first course of treatment. One month before onset she developed a rash on the forearms and thighs and two weeks later gingivitis. During the week preceding jaundice she complained of nausea. The urine contained bile, the stools were clay coloured and the icteric index was 91.

The duration was 67 days.

A low fat diet and glucose orally were prescribed. She was also given Redoxon (2 c.c. intramuscrularly once weekly for five weeks).

Bismuth injections were resumed one week before the end of the jaundice. Seven months later Neokharsivan was introduced.

Further progress was satisfactory.

Case No.A.7994. Age.47. Housewife.

Admitted on 13.1.43. as a case of Secondary Syphilis.

Prior to jaundice she received 5.2 gm. arsenic (Neokharsivan, Stabilarsan) and 3.4 gm. bismuth (Bisglucol and Bisantol).

Icterus developed 7 days after the fourth injection of the second course and 147 days from the beginning of treatment. The jaundice was mild and the urine contained a trace of bile. The duration was 14 days.

A low fat diet was advised.

One week after jaundice disappeared antisyphilitic treatment was resumed with Stabilarsan and Bisantol.

Further progress was satisfactory.

Case No1 A.8036. Age.29. Housewife.

Admitted on 2.2.43. as a case of Latent Syphilis.

Before jaundice occurred she was given 3.15 gm. arsenic (Neokharsivan, Novasenobillon) and 2.2.gm. bismuth.

Icterus appeared 60 days after the eight injection of the second course and 174 days from the beginning of treatment. When she reported the jaundice had been present for four days. The icteric index was 31. She was admitted to the ward on the following day for 11 days. The duration of the disease was 16 days. She had slight pyorrhoea. She was put on diet.

She progressed favourably and was transferred to another clinic before antisyphilitic treatment was resumed. She returned to the clinic in 1944 and received Novarsenobillon and Stabilarsan without ill effects.

Case No. A.8138. Age 43. Warehouse worker. Admitted on 6.3.43. as a case of congenital syphilis.

Antisyphilitic treatment before the appearance of jaundice consisted of 33 c.c. Acetylarsan and 12 c.c. Bisantol.

The jaundice developed 41 days after the twelfth (last) injection of the first course and 125 days from the commencement of therapy. One month before the appearance of icterus she complained of anorexia and stated that her urine was "dark". She received treatment for the jaundice from her own doctor. On reporting a trace of icterus was found to be still present, the urine contained a little bile and the icteric index was 23. Approximate duration was 36 days.

She was instructed to remain on a low fat diet.

Bismuth injections were resumed one week after the disappearance of jaundice and Stabilarsan was introduced in the second post-icteric course.

Further progress was satisfactory.

Case No.A.8155. Age.27. Housewife.

Admitted on 10.3.43. as a case of Secondary Syphilis.

Prior to the onset of jaundice she received 2.0 gm. Stabilarsan and 2.9 gm. bismuth.

Icterus appeared 7 days after the fourteenth injection of the first course and 113 days from the beginning of treatment. The onset was associated with nausea. The icteric index was 83. Two weeks after the onset she complained of pain in the shoulders She had some carious teeth. The duration was 28 days.

She was advised about diet.

Antisyphilitic therapy was resumed with Acetylarsan and bismuth 21 days after the end of jaundice. Five months later Stabilarsan was introduced and further progress was satisfactory.

Case No. A.8256. Age 20. Occupation not recorded.

Admitted on 5.1.37. as a case of Congenital syphilis.

Prior to onset she received 13.95 gm. arsenic (Kharsulphan, Stabilarsan) 94 c.c. Acetylarsan and 16.22 gm. bismuth (Bisglucol, Bisantol and Neocardyl).

Jaundice developed approximately seven years after the commencement of treatment and followed the eighth injection of the eleventh course. When she reported she stated that the jaundice had been present for three weeks and that she was receiving treatment from her own doctor. She was still very yellow and was referred back to her doctor for treatment. Duration was uncertain. Her teeth were unsatisfactory. Her sister (A.6428) developed jaundice about the same time.

Anti-syphilitic treatment was resumed with bismuth shortly after the disappearance of jaundice. Acetylarsan was introduced in the second post-icteric course and was succeeded by Stabilarsan in the next course. Further progress was satisfactory until she was transferred to another clinic in 1945.

Case No.A.8552. Age.40. Housewife.

Admitted on 27.7.43. as a case of Congenital Syphilis.

Prior to jaundice she received 6.1 gm.Stabilarson 33 cc. Acetylarsan and 6.08 gm. bismuth.(Bisglucol, and Bisantol).

The jaundice developed 53 days after the tenth injection of the third course and thirteen months from the commencement of therapy. She appeared very jaundiced and the icteric index was 71. The duration was 17 days. She had several carious teeth.

Low fat diet, saline purgatives, glucose orally a liberal daily intake of fluids, and Fersolate tablets were prescribed.

Antisyphilitic therapy was resumed with Bisantol (14 days after the end of jaundice and Acetylarsan was introduced seven months later.

Further progress was satisfactory.

Case No. A.8630. Age 31. Clerkess.

Admitted on 20.8.43. as a case of Primary syphilis.

Anti-syphilitic treatment prior to jaundice consisted of 3.95 gm. arsenic (Neokharsivan, Stabilarsan) and 3.4 gm. bismuth (Bisglucol and Bisantol).

Icterus appeared 9 days after the sixth injection of the second course and 123 days from the beginning of treatment. Three days before the onset of jaundice she complained of nausea, dyspepsia, anorexia and epigastric pain. The jaundice was relatively mild and bile was present in the urine. The duration was 35 days. The teeth were poor.

Diet was advised and 2 c.c. Redoxon were given once weekly for four weeks.

Injections of bismuth were resumed 24 days before the final disappearance of jaundice, and Acetylarsan was introduced one month later. Further progress was satisfactory.

Case No.A.8686. Age.45. Housewife.

Admitted on 11.9.43. as a case of Sero-positive primary syphilis.

Prior to jaundice she was given 0.6 gm. Novarsenobillon and 0.5 gm.bismuth.

Icterus appeared about two weeks after the beginning of treatment and followed the third injection of the first course. Just before the onset she complained of nausea, diarrhoea and "being shivery". She received treatment from her own doctor. The duration was approximately 14 days.

Bismuth injections were resumed just over one month after the disappearance of jaundice and Stabil-arsan was introduced two months later.

Further progress was satisfactory.

Case No.A.8735. Age.29. Housewife.

Admitted on 23.9.43. as a case of Latent Syphilis.

Prior to jaundice she received 11.95 gm. Stabilarsan and 7.19 gm. bismuth.(Bisglucol and Bisantol). Treatment had been started before she attended the clinic).

Icterus developed 3 days after the second injection of the third course and approximately 28 months from the commencement of therapy. One month before the onset she complained of general irritation of the skin. At the onset of jaundice the icteric index was 35. The duration was approximately 23 days. She was six months pregnant at the time of jaundice.

She was instructed to take a low fat diet. Glucose orally and Persolate tablets were prescribed.

Bismuth injections were restarted about 17 days after the end of jaundice and Stabilarsan was introduced one month later. She progressed satisfactorily and was discharged in 1945.

Case No.A.9035. Age.31. Housewife.

Admitted on 28.12.43. as a case of Secondary Syphilis.

Treatment prior to jaundice she received 1.95 gm. arsenic (Neokharsivan, Stabilarsan) and 3.2 gm. bismuth.

The icterus appeared 8 days after the first injection of the second course and 112 days from the beginning of treatment. During the two weeks preceding the onset she complained of pains in the shoulders and nausea. These symptoms continued during the early stages of jaundice. The stools were yellow, the urine contained bile and the icteric index was 53 (later 50). The duration of the disease was 22. She had a few carious teeth and pyorrhoea.

She was advised about diet. Glucose orally, Vitamin C tablets and Fersolate tablets were prescribed.

Bismuth therapy was resumed 14 days after the disappearance of icteris and Acetylarsan was introduced within two months. Novarsenobillon was given without ill effect three months later and she progressed satisfactorily.

Case No.A.9211. Age.39. Milk-bar Assistant.

Admitted on 23.2.44. as a case of Secondary Syphilis.

Antisyphilitic treatment prior to jaundice consisted of 1.35 gm. Neokharsivan and 0.9 gm.bismuth.

Icterus appeared 7 days after the sixth injection of the first course and 29 days from the commencement of therapy. The urine contained bile and the icteric index was 33 (later 67). She was admitted to the ward on the following day for 15 days. The disease ran a relatively mild but prolonged course, the duration being 62 days.

Special low fat diet, glucose orally and Vitamen C tablets were prescribed.

Antisyphilitic treatment was resumed 2 days after the end of the attack with Bisantol and Acetylarsan was introduced two months later. Stabil-arsan was given in the second post-icteric course.

She progressed satisfactorily.

Case No.A.9363. Age.19. Domestic.

Admitted on 7.4.44. as a case of Secondary Syphilis.

Prior to the onset of jaundice she received 3.75 gm. Stabilarsan and 2.7 gm. bismuth.

Icterus appeared 2 days after the seventeenth (last) injection of the first course and within 63 days of the beginning of treatment. The jaundice was mild at first and the icteric index was 17, (later 71). She was admitted to the ward but was transferred on the ninth day to the Maternity Pavilion for delivery, where she remained for a further 22 days. The condition of her teeth was unsatisfactory.

A low fat diet was ordered.

Antisyphilitic treatment was resumed with Bisantol 21 days after the beginning of treatment, and Acetylarson was introduced one month afterwards. Stabilarsan was given in the second post-icteric course.

She progressed satisfactorily.

Case No.A.9376. Age.22. Housewife.

Admitted on 13.4.44. as a case of Sero-positive primary syphilis.

Prior to the onset of jaundice she received 3.35 gm. arsenic (Novarsenobillon,Stabilarsan) and 2.8 gm.bismuth (Bisglucol,Bisantol).

Icterus appeared 7 days after the fifth injection of the first course and 133 days from the beginning of treatment.

The jaundice was mild and the icteric index was 35 (later 59). The duration of the attack was 18 days. She had a few carious teeth.

She was instructed to take a low fat diet. Saline purgatives, glucose orally, and Fersolate tablets were prescribed.

Bismuth therapy was resumed 5 days after the disappearance of icterus, with Bisantol and Acetylarsan was introduced within one month. Novarsenobillon was given in the second post-icteric course without ill effect.

She progressed satisfactorily.

Case No. A.9395. Age 24. Rope worker.

Admitted on 19.4.44. as a case of Secondary syphilis.

She was referred to the clinic from a medical ward as a case of secondary syphilis associated with a syphilitic hepatitis. On admission she was found to be deeply jaundiced and ill. The liver was $2\frac{1}{2}$ to 3 finger breadth's below the costal margin. The tongue was furred. In the medical ward she had developed a high temperature reaching 105°F. There was a leucocytosis. The icteric index was 100. The serum albumin was 2.21 Agm% and the serum globulin 2.55 Agm% and the urea nitrogen 13 mgm%. She later developed a slight leucopenia and a lymphocytosis. Three weeks after admission the liver was just palpable. The duration was 41 days.

She was put on a low fat diet and received 2 c.c. Redoxon on five occasions. Anti-syphilitic treatment was commenced immediately with Bisantol. Acetylarsan was introduced in the fifth injection. She progressed satisfactorily but defaulted when she left the ward.

PART II.

INTRODUCTORY NOTE.

In this section of the thesis an analysis of the findings from the investigation of the foregoing cases is given. The discussion is arranged under the following headings:

1. The incidence of jaundice in the Clinic.
2. The incubation period.
3. Possible predisposing factors:-
    a. Age.
    b. Sex.
    c. Occupation.
    d. Stage of Syphilis
    e. Drugs.
    f. Alcohol.
    g. "septic foci".
4. The prodromal stage.
5. Diagnosis.
6. The clinical course.
7. Duration.
8. Pathology.
9. Treatment.
10. Resumption of anti-syphilitic therapy.
11. Relapse.
12. Prognosis.
13. Summary and conclusions.

I N C I D E N C E

As already stated at the beginning of the thesis this investigation of cases of clinical jaundice among male and female patients in the venereal Diseases Clinic of the Edinburgh Royal Infirmary covers a period of nine years namely January 1937 to December 1945. It was decided to subject cases occurring as far back as 1937 to examination, so that a review of cases in pre-war years could be obtained and compared with cases in the war period. Although the last case of jaundice occurred in February 1945 the "observation period" of the investigation was continued up to December of that year in order that the value of the preventative measures put into operation in 1944 and 1945 could be assessed satisfactorily.

The investigation was commenced about the middle of 1944 and, in consequence, the details of the majority of the cases were obtained from the case-history cards. Cases during the latter half of 1944 and the early months of 1945 came under personal observation.

During these nine years 374 cases of clinical jaundice occurred in the clinic. Of these, 310 were males and 64 females. This markedly higher incidence of the disease in men is in agreement with the observations of Marshall (1943) and other workers.

The yearly incidence of the cases is demonstrated in Fig. 2 . A slight increase occurred in 1938 and this was maintained in 1939. More cases occurred in 1940 and the rise continued through 1941 until the peak of 122 cases was reached in 1942. In 1943 there was a small decline in the number, followed by a very appreciable decrease in 1944. By 1945 the number was almost negligible, 3 cases only being seen during January and February and none at all during the rest of the year. Therefore the period of rise in the incidence of jaundice mainly covers the four years 1940 to 1943.

The variation in the number of cases from month to month is illustrated by the graph (Fig. 1 - frontispiece). Over the years 1938 and 1939 a fairly steady level was maintained with the exception of a sudden and short-lived increase of the number of cases in June of the latter year. During the first half of 1940 the level was much the same as in 1938 and 1939, but the numbers began to increase in August and rose steadily to 8 cases in October.

A decline then occurs until only 2 cases are reported in December. In the early months of 1941 there is first a slight increase and then a decrease. From about June of the same year there began a steady rise in the number of cases, although there was fluctuation from month to month. The curve continued into 1942 and remained at a high level, the

YEAR.	NUMBER OF CASES OF JAUNDICE. (including relapses)		
	Males.	Females.	Totals.
1937	18	-	18
1938	21	5	26
1939	27	1	28
1940	33	5	38
1941	41	9	50
1942	107	15	122
1943	78	22	100
1944	14	8	22
1945	3	-	3

Fig. 2 . YEARLY INCIDENCE OF JAUNDICE.

largest number of cases (14) occurring in April. The numbers then began to drop slowly from approximately January 1943 until a sudden marked increase was recorded in December of the same year. However, the next month, January 1945, saw an equally sudden decrease and the curve continued to fall steadily until no cases at all were seen from March up to December, 1945.

It can be seen, therefore, that the period of increased incidence in jaundice extended approximately from August 1940 to March 1944. The peak incidence was maintained over the interval January 1942 to November 1943 approximately.

There was no marked seasonal variation.

On the same graph are shown the numbers of new cases of syphilis and injections each month for comparison with the incidence of jaundice cases (also see appendix). It will be noted that over the period of increased incidence of jaundice there was a corresponding increase in the number of new cases of syphilis admitted to the clinic and the number of injections given. However, over the period when the incidence of jaundice was declining there was no correspondingly equal decrease in syphilis or injections, the incidences in both these remaining at a fairly high level.

The relationship between the total number of cases of jaundice and the total number of cases of

syphilis during the nine years is given in the table in Fig. 3 .

MORTALITY.

Eight deaths (2·1%) attributable to liver damage occurred in the series. Of these, seven were in males and one female. Post-mortem examinations were conducted on six cases and the findings thereon will be discussed more fully in the section on pathology.

The cases in which death occurred were:-

Case No. D 3731
" " D 6141
" " D 7501
" " D 8093
" " D 9143
" " E 328
" " E 430
" " A 5224.

SEX.	Number of cases		Per Cent.
	Jaundice	Syphilis	
Males	310	3,108	9·9
Females	64	2,020	3·1
Totals	374	5,128	7·2

Fig. 3 : Incidence of Jaundice and Syphilis.

INCUBATION PERIOD.

The "incubation period" of the disease was taken as the interval which elapsed between the first injection the patient received and the development of jaundice.

The average duration of this interval was 98 days. In calculating this figure, the cases which occurred over 150 days after the commencement of anti-syphilitic treatment were excluded.

Among the men the shortest incubation period was 11 days. The longest interval between the beginning of treatment and the appearance of jaundice was four and a half years.

Among the females the shortest recorded interval was 15 days, while the longest was five years and nine months.

In Fig. 4 , a table of the various intervals between the first injection and the number of cases of jaundice in each are given. The majority of cases appeared within 81 to 150 days. If we accept the inoculation of an infective agent as probably occurring during the first few injections of treatment, we find that this incubation period more or less agrees with the observations of Beattie and Marshall (1944) who found that jaundice generally developed between 12 and 17 weeks after the initiation of antisyphilitic treatment.

Interval (in days) from First Injection to Jaundice	less than 30	30-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-150	151-200	200-250	over 250
No. of Male Cases	6	6	7	10	10	12	27	45	26	21	53	24	24	34
No. of Female Cases	3	1	-	-	1	-	3	2	-	6	11	6	8	22
Totals	9	7	7	10	11	12	30	47	26	27	64	30	32	56

Fig. 4. "Incubation Periods".

It will be noted, however, that quite a considerable number of cases developed after an interval of over 150 days and especially over 250 days. In such cases the possibilities are that either inoculation of an infective agent did not take place until the treatment was well advanced, or the jaundice was due to the toxic effects of the arsenic, possibly in conjunction with a predisposing factor other than infection e.g., alcohol. This long interval occurred more commonly among the females.

The shorter the incubation period the fewer are the cases of jaundice. It may be that these earlier cases of the disease belong to the "early" type already discussed in the Introduction. It is possible that others were genuine cases of infective hepatitis who were incubating the disease when antisyphilitic treatment began, or became infected during the first few weeks of treatment.

The interval between the last injection and appearanee of jaundice.

The time that elapsed between the last injection of anti-syphilitic treatment and the appearance of jaundice averaged 23 days.

Examination of the table in Fig. 5 , however, will show that most cases had a shorter interval than this. In the largest group of cases the time was 6 to 10 days. The second largest group of patients developed the disease within 11-30 days of their last

Interval from last injection to appearance of jaundice.	CASES		
	Males.	Females.	Totals
0 - 5 days	27	8	35
6 - 10 "	84	20	104
11 - 20 "	53	11	64
21 - 30 "	53	6	59
31 - 40 "	33	7	40
41 - 50 "	7	1	8
51 - 60 "	9	3	12
61 - 70 "	13	-	13
71 - 80 "	1	2	3
81 - 90 "	8	1	9
over 90 "	5	1	6
Uncertain	14	3	17

Fig. 5 . INTERVALS between last injection and jaundice.

injection. The next two groups, which numerically were practically the same, had intervals of under five days and 31 to 40 days.

In the majority of the cases therefore, the jaundice became manifest within 40 days of the last injection. A relatively small number of patients experienced longer intervals than this, and it was over 90 days in five males and one female. In one male it was 170 days.

In five cases the jaundice appeared one day after the last injection.

In seventeen cases it was impossible to ascertain the length of time on account of such factors as temporary default by the patient or treatment for the jaundice being received outside the clinic.

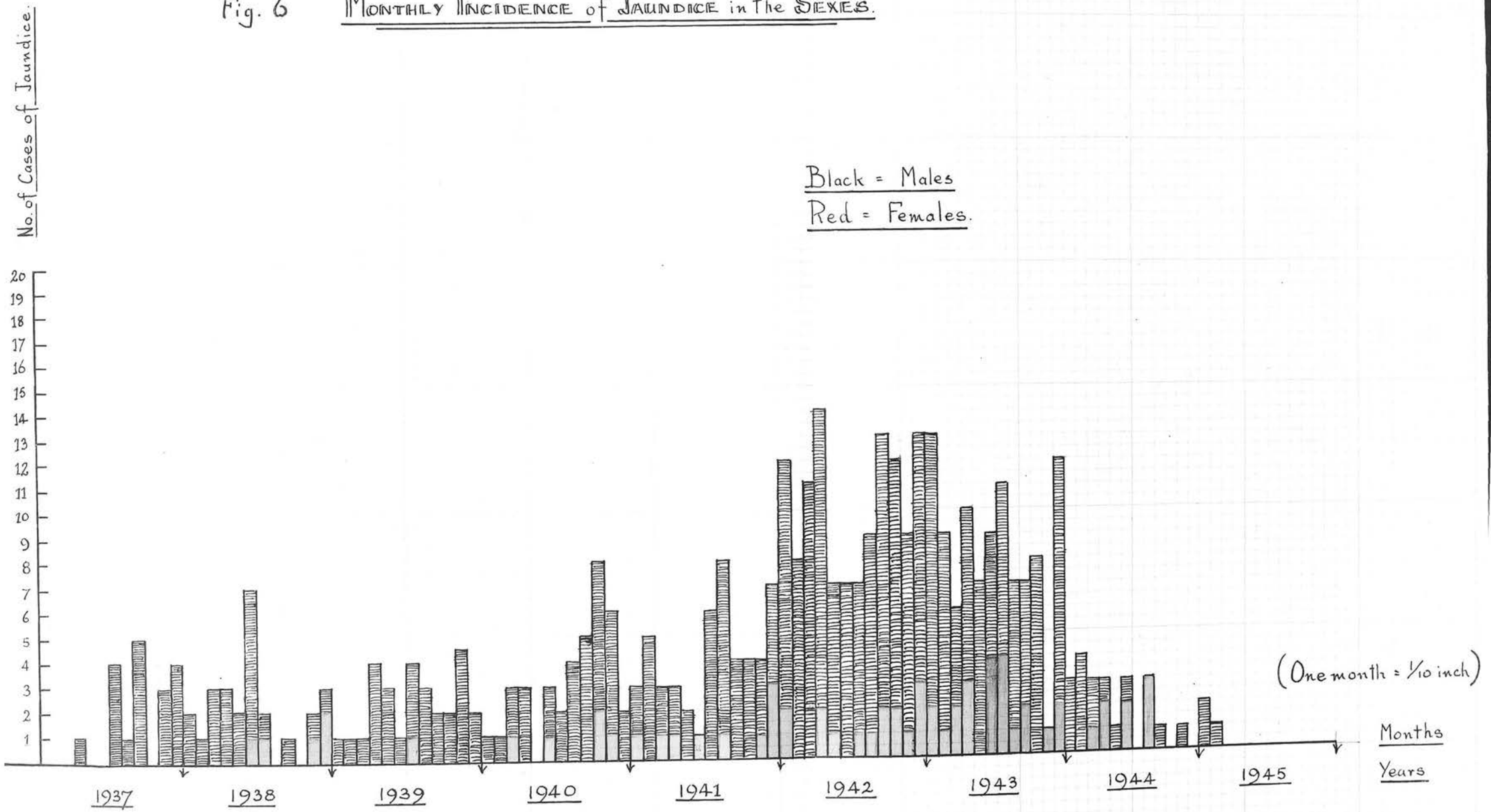
S E X.

Men were very much more liable to jaundice than women. Of the 374 cases in this series, 310 were males and 64 were females.

The graph (Fig. 6 .) gives the monthly incidence in the sexes. A few female cases are irregularly spaced over the first few years, but the increased incidence takes place at about the same time in both sexes.

Fewer cases of syphilis in females were admitted to the clinic than males (see appendix) but the ratio of syphilis between the sexes bears no relation to the ratio of jaundice. As previously pointed out in the Introduction, this increased liability to the complication of jaundice during arsenotherapy among men has been reported by many workers. Marshall (1943) found the incidence among women was less than 2%. In this series it was slightly higher, namely, 3·1%.

Fig. 6 MONTHLY INCIDENCE of JAUNDICE in the SEXES.



A G E.

Fig.7 , is a table representing the incidence of jaundice in the various age groups.

Most of the cases occurred in patients of 21 to 45 years of age i.e. the group representing the majority of patients likely to be attending the clinic.

Among the males the age groups with the largest number of cases were 21 to 25 years and 31 to 35 years. Among the females the largest number of cases appeared in the age group 26-30 years.

Only one case occurred in a patient under 16 years of age. Twenty-four men over 60 years of age were affected by the disease.

Age Periods	Males		Females		Totals	
	Cases	%	Cases	%		%
11-15 yrs.	1	0.3	-	-	1	0.26
16-20 "	12	3.9	9	14.0	21	5.6
21-25 "	50	16.0	10	15.6	60	16.0
26-30 "	41	13.2	16	25.0	57	15.0
31-35 "	52	16.7	9	14.0	61	16.3
36-40 "	40	12.9	7	10.9	47	12.5
41-45 "	35	11.2	5	7.8	40	10.6
46-50 "	22	7.0	5	7.8	27	7.2
51-55 "	19	6.1	2	3.1	21	5.6
56-60 "	14	4.5	1	1.5	15	4.0
61-65 "	14	4.5	-	-	14	3.7
66-70 "	7	2.2	-	-	7	1.8
71-75 "	3	0.9	-	-	3	0.8

Fig. 7 . AGE INCIDENCE OF JAUNDICE.

OCCUPATION

MALES.

The occupations were divided into four groups - heavy, medium, light and retired or unemployed - depending on the nature of the work involved.

Exactly half the cases were engaged on heavy work and about a quarter on medium type of work (Fig. 8 .). Most of the men were labourers, miners, seamen etc.. Men working with such as metals, paints or oils numbered 17.

Nine patients were barmen or brewery-workers.

FEMALES.

More than half the cases were housewives. The next, and very much smaller, group was engaged on factory work. The number of cases in each occupation is shown in Fig. 9 .

Nature of Work	CASES OF JAUNDICE	
	Number	Per Cent
Heavy	155	50.0
Medium	88	28.3
Light	50	16.1
Retired or Unemployed	17	5.4

Fig. 8 . OCCUPATION - MALES.

Occupation.	CASES OF JAUNDICE	
	Number.	Per Cent.
Housework	44	68.7
Kitchen-Work	4	6.2
Governess	1	1.5
Telephonist	1	1.5
Clerkess	4	6.2
Factory Work	6	9.3
Bus-Conductress	1	1.5
Unemployed	3	4.6

Fig. 9 . OCCUPATION - FEMALES.

STAGE OF SYPHILIS.

Most of the cases of jaundice were experienced among patients suffering from early syphilis (primary and secondary), i.e. the most commonly seen stage of syphilis.

Two non-syphilitic patients, who had received prophylactic arsenotherapy because of recent contact with known infectious cases, developed jaundice.

The details are given in the table (Fig.10 .).

Stage of Syphilis	Number of cases of Jaundice		
	Males	Females	Totals.
Sero-negative primary	56	4	60
Sero-positive primary	86	7	93
Secondary	49	20	69
Latent	34	10	44
Tertiary (including cardiovascular & visceral syphilis)	32	8	40
Neurosyphilis (including meningovascular syphilis)	40	3	43
Congenital	12	11	23
Non-Syphilitics (Prophylactic treatment)	1	1	2

Fig. 10. Jaundice and the stage of Syphilis.

THE DRUGS.

(1) Type.

The table in Fig.11 . demonstrates the incidence of jaundice with the various drugs.

The compounds most implicated were Stabilarsan, Neokharsivan and Novarsenobillon, in that order. The next highest incidence was with Tryparsamide.

The number of cases following the use of Mapharside was small. However, the incidence with "intensive" (eight-day) mapharside combined with pyretotherapy was relatively high. Of the 50 cases who were subjected to this form of treatment 15 eventually developed jaundice. An interesting feature with regard to these cases of "intensive" therapy is that the subsequent jaundice was of the "late" type and not the "early" type as would have been expected. The average incubation period was 61 days. The shortest and longest intervals between the reception of the treatment and development of jaundice were 34 and 90 days respectively.

Although 32 patients developed jaundice after Acetylarsan many of these cases had received trivalent arsenical compounds in the earlier stages of their treatment.

A point of interest is that ~~four~~ five cases had attacks of jaundice after the use of bismuth and colloidal mercury only. These drugs were given intramuscularly.

Drug.	Number of Cases		
	Males.	Females.	Total.
Stabilarsan	82	26	108
Neokharsivan	86	9	95
Novarsenobillon	56	8	64
Evarsan	8	-	8
Kharsulphan	1	-	1
Mapharside	9	-	9
Mapharside (intensive) & Pyretotherapy	15	-	15
Neohalarsine	1	-	1
Tryparsamide	27	3	30
Acetylarsan	16	16	32
Bismuth	3	1	4
Colloidal Mercury	1	-	1

Fig. 11 . Incidence of Jaundice after Drugs.

One patient had previously received malarial therapy.

(2) Dosage.

The largest group of cases (70) developed jaundice after a total of 4.0-5.0 gm. trivalent arsenic. The next most frequent total was 3·0-4·0 gm. followed closely by 5.0-6.0 gm.

In 26 cases the total of trivalent arsenic received before jaundice was less than 1.0 gm. In 13 cases the total exceeded 10.0 gm.

With tryparsamide, most of the patients developed jaundice after a total of 20 - 30 gm. Four cases had received less than 10 gm. and two had received more than 100 gm.

(3) Number of courses.

The average course consisted of injections given once weekly for ten weeks.

Fig.12 . shows the relationship between the number of completed courses of anti-syphilitic treatment and the incidence of jaundice.

By far the largest number of cases of jaundice developed after the completion of the first course of treatment. The next largest number developed before the first course had been completed.

No. of Courses of Arsenotherapy Completed prior to Jaundice	NUMBER OF CASES		
	Males	Females	Totals
Less than 1	67	8	75
1	187	28	215
2	35	7	42
3	9	6	15
4	6	4	10
5	3	1	4
6	2	2	4
7	-	3	3
8	-	2	2
9	1	-	1
10	-	2	2

Fig.12 . Incidence of Arsenotherapy Courses and Jaundice.

A L C O H O L.

A history of alcohol was given by 40 patients as follows:-

Males	Females	Total	Per Cent.
39	1	40	10·6

Fig. 13 .

Although most patients denied the taking of alcohol it is probable that 10·6% is a conservative estimate, especially when one considers the large numbers of labourers and sailors involved.

SEPTIC FOCI.

A list of lesions which may possibly fall into the class of "septic foci" is given in the accompanying table (Fig. 14 .).

The most noticeable feature is that quite a large number of patients had oral sepsis. In all, 82 cases are recorded, and the females were relatively more affected than the men.

Skin lesions were next in importance. Four cases had arsenical dermatitis just prior to, or with, the jaundice while 18 patients had other forms of skin lesion.

Patients with "septic foci" other than the above two types, were seven in number. The nature of these "foci" is described in the table.

Sex.	Oral Sepsis	Arsenical Dermatitis.	Other Forms of skin lesion	Mild chronic conjunctivitis	Cystitis	Inflammation of Varicose Vein. Ulc Var.	Chest Sinus	Chronic Bilat. Otitis Media	Osteo-arthritis.
Males	53	4	18	1	1	1	1	1	1
Females	29	-	-	-	-	1	-	-	-
Totals	82	4	18	1	1	2	1	1	1

Fig. 14 . "SEPTIC FOCI".

THE PRODROMAL STAGE.

Symptoms.

The commonest complaint prior to the appearance of jaundice was nausea. Of the other gastro-intestinal complaints, anorexia and dyspepsia were next in frequency. Also fairly common was the complaint of abdominal "pain", which was felt in the epigastrium, although one patient experienced it in the lower abdomen. Often described by the patient as "pain", in most cases it took the form of abdominal "discomfort" rather than actual pain. Vomiting and diarrhoea were uncommon.

After nausea the most frequent complaints were of "pain in the joints" and muscular stiffness. The joint most frequently involved was the shoulder. Whereas most of the prodromal symptoms appeared a few days before jaundice, these "rheumatic" complaints were often noticed several weeks beforehand.

Rarer symptoms were sciatica, dysphagia for solids, pruritus and heartburn. Two patients complained of "depression" and urticaria was present in one man and one woman. Headache was usually occipital.

The incidence of the various symptoms and signs experienced during the prodromal period is illustrated by the table in Fig. 15 .

Symptoms and Signs	No. of Cases		
	Males	Females	Total
Anorexia	11	5	16
Nausea	19	21	40
Vomiting	6	3	9
Flatulence	1	-	1
Heartburn	2	1	3
Dysphagia for solids	1	-	1
Diarrhoea	6	2	8
Joint pains (generalized)	8	1	9
Joint pains (shoulder)	19	1	20
Joint pains (knee)	11	-	11
Muscular Stiffness (local & general)	11	6	17
Epigastric Pain	12	4	16
Lower Abdo. pain	1	-	1
"Dark Urine"	12	1	13
Malaise & Fatigue	4	2	6
Coryza, "Flu", "Chill"	10	3	13
Pruritus	1	-	1
Headache	4	2	6
Purpuric rash (legs)	1	-	1
Depression	-	2	2
Urticaria	1	1	2
Sciatica	1	-	1

Fig.15 . Incidence of Prodromal Symptoms and Signs.

Duration.

The average duration of the prodromal stage was 10 days.

In a number of patients, particularly those with arthritic symptoms, the duration was as long as 6 weeks, and in one case it was 2 months.

A few patients first complained of prodromal symptoms one day before the appearance of the jaundice.

D I A G N O S I S.

PRODROMAL STAGE.

When a patient first complained of prodromal symptoms the drugs were withheld for a short while and he was kept under observation and asked to report to the clinic immediately if any worsening of his condition developed. If the symptoms were mild the bismuth injections were sometimes continued, especially in cases of early syphilis, although the general rule was the temporary withdrawal of both arsenic and bismuth.

A sample of blood was sent for estimation of the icteric index. This test was repeated on subsequent visits and, used in conjunction with the clinical assessment of his condition, afforded a forewarning of an impending jaundice.

The routine examination of the urine for bile prior to injection-therapy was continued throughout this observation period. In suspected cases of latent jaundice the urine was examined for the presence of urobilinogen.

STAGE of JAUNDICE.

In 156 cases there was a history of prodromal symptoms, but in the rest there was no warning of impending jaundice and the condition was often well established by the time the patient reported for examination.

Most of the cases had icteric staining of the skin when they reported, but 18 came when icterus of the conjunctivae only was present.

After obtaining a history, the urine was examined for bile, the abdomen palpated for liver enlargement and a sample of blood sent for estimation of the icteric index.

Where any doubt existed as to the nature of the jaundice further tests were done. In four cases the serum albumin gave values ranging from 3.63 to 4.58 mgms.%, and the serum globulin results varying from 1.33 to 2.75 mgms.%. In one case the blood cholesterol was 211 mgms%, in another it was 182 mgms%. The serum phosphatase was 3.6 mgms% in one case and 3.7 mgms% in another. Two patients had radiological examinations of the gall-bladder with negative results. In 36 patients the Van den Bergh Reaction was carried out.

In two cases the urine was found to contain crystals of tyrosin and leucin.

The specific agglutination test for Weil's disease was carried out in three cases with negative results.

NON-ARSENOTHERAPY JAUNDICE.

Four patients had jaundice resulting from their syphilitic infection. Of these two were cases of specific hepatitis in conjunction with secondary syphilis and sero-positive, ~~one~~ primary syphilis/one was due to a gumma of the pancreas and one was suspected to have a gumma of the liver.

Two cases were associated with lobar pneumonia and may not have been of the arsenotherapy type.

Haematemeses occurred in two patients and one had a spontaneous haemorrhage from the right ear.

At the onset of the disease in one case, information was obtained from the patient that there were "two cases of jaundice in the village" at the time. Also, two sisters who lived in the same house and were undergoing anti-syphilitic treatment in the clinic, developed jaundice within about a month of each other. However, no other patients gave a history of being in contact with a case of jaundice prior to the onset of their own attack.

In the cases which terminated fatally pyrexia, dehydration, abdominal pain, oedema, ascites, lethargy, and coma or delirium were marked features. One of these cases also developed a divergent strabismus.

Death usually occurred within a few days of the appearance of the neurological features.

Although complete recovery was the rule, many patients felt unwell for a few weeks or even months after the disappearance of the jaundice.

Forty-one cases received partial or complete treatment outside the clinic from their own doctors and it was not possible to ascertain with accuracy the course run by the disease in these patients.

DURATION

The average duration of the jaundice was 33 days. In the largest group of patients the duration was 21-30 days. In five cases it was less than five days and in 7 patients it was over 90 days.

In twenty-four cases who had received treatment for the jaundice outside the clinic it was not possible to ascertain the exact duration of the disease.

The table in Fig. 16. gives the relationship between the various periods of duration and the number of cases of jaundice occurring in each.

Duration of Jaundice.	NO. OF CASES.		
	Males.	Females.	Totals.
0 - 5 days	4	1	5
6 -10 "	15	1	16
11 -20 "	54	14	68
21 -30 "	63	15	78
31 -40 "	49	12	61
41 -50 "	45	5	50
51 -60 "	34	1	35
61 -70 "	10	6	16
71 -80 "	10	2	12
81 -90 "	1	1	2
90-170 "	7	-	7
Uncertain	18	6	24

Fig. 16. Duration of Jaundice.

PATHOLOGY.

Post-mortem examinations were conducted in the Royal Infirmary on five of the eight cases in which death occurred. In one patient who had been removed from the Infirmary some time before death took place, the necropsy was performed in another hospital and complete notes on the findings were not obtainable.

An attempt to perform a liver biopsy on one patient failed and the experiment was not carried out again on this patient in view of his worsening condition.

Hence, observations on the pathology of these cases of arsenotherapy jaundice had to be confined to examination of the organs after death.

The following is a summary of the more important post-mortem findings in these cases.

(1) GENERAL APPEARANCES.

In all five cases diffuse and marked jaundice of the skin was reported. Pitting oedema from the ankles to the knees was found in one case. No case showed evidence of haemorrhages into the skin.

(2) PERITONEAL SAC.

Ascites was present in four cases and consisted of clear yellowish serous fluid. In one other case there was a massive intraperitoneal haemorrhage which, as no definite bleeding point could be found, was thought to have been due to the oozing of blood into the cavity from the extraperitoneal tissues

(in relation to both kidneys) which were diffusely infiltrated with recently extravasated blood.

(3) CARDIO-VASCULAR SYSTEM

There was dilation of the heart and pallor and softening of the myocardium in three cases.

The aorta in one case showed bile-staining and another had haemorrhages into the pericardial sac.

(4) RESPIRATORY SYSTEM.

Three cases showed evidence of pulmonary congestion and oedema. Haemorrhages into the lungs were found in two cases.

In one case there was bile-staining of the larynx, trachea and bronchi.

(5) KIDNEYS.

The kidneys were pale and soft in one case and in two others the organs were congested.

(6) CENTRAL NERVOUS SYSTEM.

The only changes noted in this system were a moderately diffuse oedema of the brain in one case, and bile-staining of the leptomeninges and cerebro-spinal fluid in two others.

(7) ALIMENTARY SYSTEM.

a) Oesophagus.

In two cases the veins in the lower part of the oesophagus were found to be moderately distended. In one case the oesaphagus contained a number of fairly well marked varices, especially in the lower third.

b) Stomach and intestines.

In the case with the well-marked oesophageal varices the stomach was dilated and contained recent blood clot. As no lesions were found in the stomach or duodenum to account for this, it was concluded that the blood must have come from rupture of an oesophageal varix or varices.

In one case in which two chronic gastric ulcers were present an acute shallow gastric ulcer was also found.

Otherwise the stomach and intestines were normal and there was no evidence of duodenal catarrh.

c) Gall-bladder.

In one case the gall-bladder was distended and correspondingly thin-walled. It was filled with dark green bile containing a small irregular bile-pigment stone.

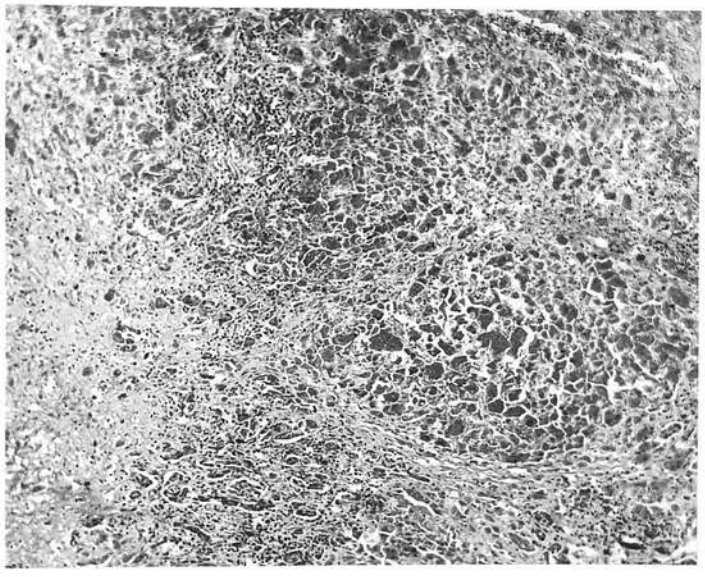
d) Liver.

The macroscopical and microscopical appearances in the liver of each patient will be described in detail as follows:-

Case No. D 7501.

The organ was reduced to about five-sixths of its normal size and, while it had more or less retained its normal shape, its surface, particularly on the inferior aspect of the left lobe, showed a fine irregularity. Its consistence was also definitely increased and, on section, its substance

Fig. 17



Case No. D 7501. LIVER x 60

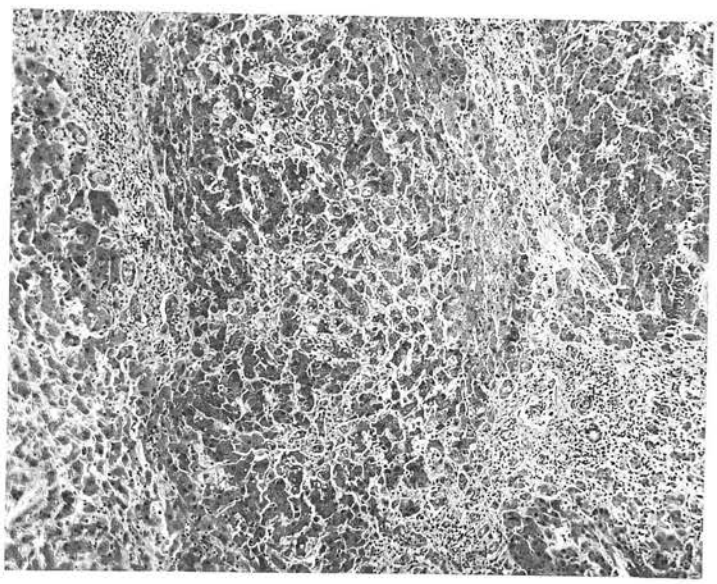
consisted of innumerable closely arranged, very small, round or oval islands of opaque, brownish-yellow liver parenchyma studded by intersecting fibrous trabeculae of thin calibre. The entire substance was also diffusely bile-stained and in both right and left lobes innumerable small red haemorrhagic areas were scattered about irregularly in some regions. The picture was of cirrhosis of the liver complicated by extensive acute necrosis.

Microscopically (see photomicrograph, Fig. 17) only a few foci of degenerated liver cells are present. The greater part of the tissue was completely necrotic and in some areas was undergoing autolysis. Early signs of bile duct proliferation are present in the portal tracts. The features of the tissue thus indicate that the liver was originally the seat of portal cirrhosis and that upon these lesions a phase of widespread acute liver necrosis (now in a fairly late stage) was superimposed.

Case No. 328.

The liver was greatly reduced in size, of the usual shape and firm in consistence. The surface on all aspects was finely nodular. The parenchyma was divided up into innumerable islets of liver tissue of varying size and shape separated by intersecting bands of fine connective tissue. The majority of the islets were yellowish in colour, some being very pale.

Fig. 18



Case No. E 328. LIVER x 60

Microscopically (see photomicrograph Fig. 18) the parenchyma is composed of irregular islands of regenerating liver tissue separated, and partially surrounded, by cellular fibrous tissue containing numerous proliferating bile ductules. The cells in the regenerating islands of liver tissue showed cloudy swelling, fatty degeneration and, in some cases, focal necrosis.

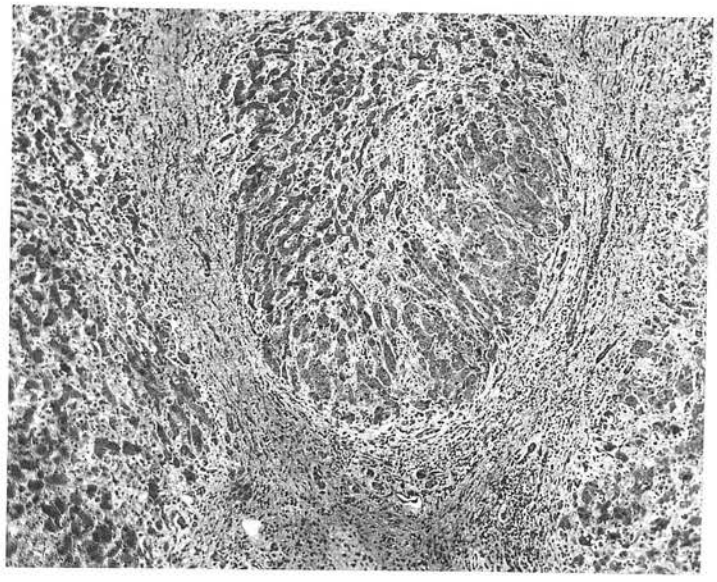
The features are those of a fairly active atrophic cirrhosis upon which is imposed an acute hepatitis.

Case No. D 6141.

The organ was very greatly reduced in size, of average shape and very tough in consistence. The surface was distinctly nodular, a well marked degree of atrophic cirrhosis being present. On section, the liver parenchyma was completely disorganised and consisted of innumerable islets of liver tissue of varying size and shape, yellowish in colour and separated one from the other by fairly broad interlacing bands of connective tissue.

Microscopically (see microphotograph, Fig. 19) the general picture is similar to that in Case No. E.328, apart from the fact that the fibrous tissue is much more prominent and dense, i.e. the features are those of an active, but older atrophic, so-called, multilobular cirrhosis.

Fig. 19



Case No. D 6141. LIVER x 60

Case No. D 9143.

The liver was rather small and cirrhotic in appearance. The cirrhosis was very fine and regular, not suggesting liver atrophy.

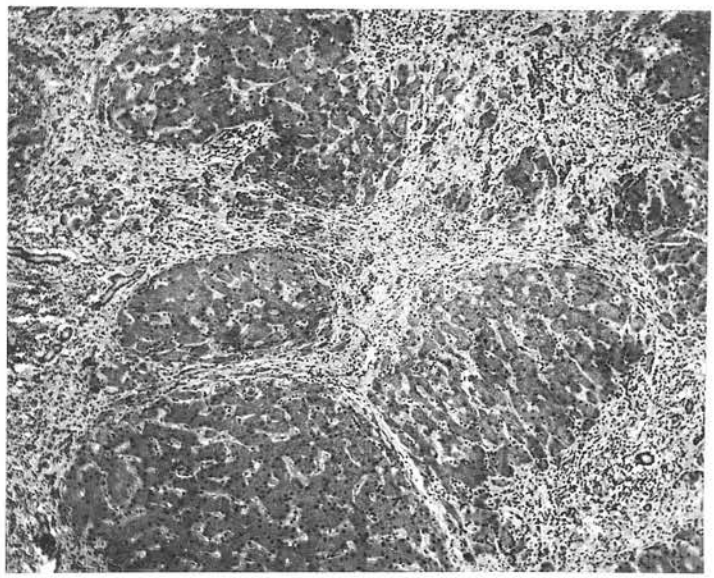
Microscopically (see photomicrograph, Fig. 20) the parenchyma is composed of irregular islands of regenerating liver tissue separated and partially surrounded by cellular fibrous tissue containing a great many proliferating bile ductules. The liver tissue is relatively free from gross signs of degeneration. The features those of an active, well developed cirrhosis intermediate in age between the stages in Case No. E 328 and Case No. D 6141.

Case No. D 8092.

The organ was reduced to about three-quarters of its normal size. Its capsular aspect was smooth, but numerous small haemorrhages were distributed irregularly under the capsule. The cut surface was opaque, dull yellow and showed a loss of architecture. The appearances suggested that the tissue was diffusely necrotic. No haemorrhages were present in the cut surface and there was no evidence of vascular mottling.

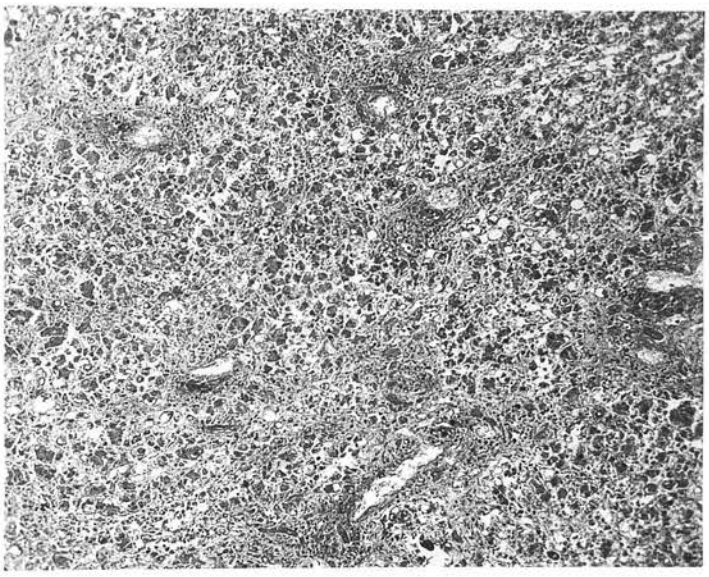
Microscopically (see photomicrograph, Fig. 21) the picture is one of complete necrosis of liver cells with widespread autolysis. No signs of surviving cells are present and no signs of bile duct epithelium proliferation are present. The features are those

Fig. 20



Case No. D 9143. LIVER x 60

Fig. 21



Case No. D 8092. LIVER x 60

of typical acute yellow atrophy, at an earlier stage than in Case No. D7501.

Case No. A 5224.

As the post-mortem examination on this case was not conducted in the Royal Infirmary, full details of the results were not available. A very gross degree of syphilitic cirrhosis was the main abnormality present, and the splenic vein was almost completely thrombosed, apart from a very small channel.

(8) SPLEEN.

In three cases the organ was moderately enlarged and firm in consistence. In one of these there were haemorrhages into the pulp.

In another case the spleen was about four times its normal size, of normal shape and very fleshy in consistence. Section of the organ revealed the typical congested fleshy hyperplastic pulp associated with cirrhosis and the Malpighian bodies were easily distinguishable.

In another case the organ was twice its normal size, of the usual shape and firm in consistence. Irregular thickening of the "ice sugar" type was present in the capsule. On section there was the characteristic pink, fairly firm fleshy pulp of the spleen associated with cirrhosis of the liver.

TREATMENT

A) PREVENTION.

1) Use of Glucose.

When the number of cases of jaundice occurring in the clinic was found to be on the increase the administration of glucose to the patients prior to receiving their injections was given a trial.

A tablespoonful of powdered glucose or concentrated glucose solution was given while awaiting injection. Another method was to use 20% solution of glucose instead of distilled water as the solvent for the arsenical compound. (A similar procedure using a solution of sodium thiosulphate was adopted in some patients). In some cases the patient received an injection of 20-40 cc 20% glucose solution immediately after the injection of arsenic had been given.

In suspected cases of impending jaundice intravenous infusions of fairly large quantities of glucose solution were tried. The volume varied from 400 cc. to 1,200 cc. and was given once daily for about two to three days, or more, depending on the response of the patient.

On the whole these measures seemed to exert very little or no effect on the incidence of the disease, although a few of the cases who received glucose "drips" appeared to benefit from them and it is possible that many a relatively mild jaundice

was aborted by this procedure.

2) Improved sterilization of syringes.

About the end of 1943 it was decided that an improved method of sterilization of syringes shoule be instituted in view of the reports by various workers drawing attention to the inadequacy of the techniques being employed by most clinics at that time.

Previously only a few syringes were kept in use at one time and they were often only washed out with sterile water and spirit.

Boiling of syringes had been suggested by some writers but this method was not adopted as the glass-metal syringes being used would be liable to break and the extremely large number of injections given each day in the out-patient department of the clinic would probably have prevented the technique being conducted with a satisfactory degree of efficiency (see Appendix for table of the monthly incidence of injections). However, such a technique as this would probably be satisfactory for a small clinic.

The two methods adopted were:-

a) Improved chemical sterilization:

This technique was instituted in January 1944. The method was as follows:-

The syringes were assembled and carefully washed through with sterile water. They were then dismantled and submerged in baths of lysol (1:10) three-quarters of an hour prior to use. Separate

dishes were provided for the arsenical and blood syringes and had to be large enough to accommodate sixteen and six syringes (10 cc) respectively. The needles were placed in a small dish containing spirit.

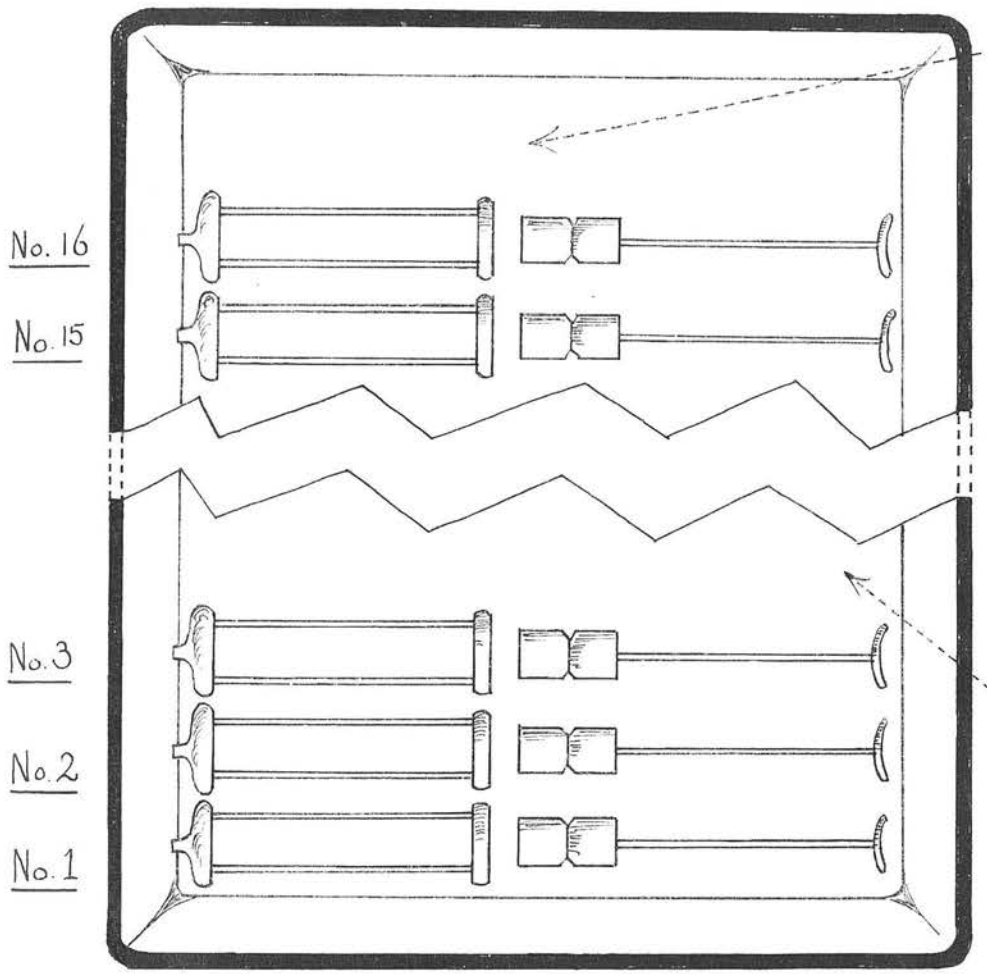
Syringes for intramuscular use were treated as above, but were placed in spirit and their needles were sterilized in hot oil.

When required the syringe nearest the operator i.e. No. 1 (see fig. 22) was removed from the lysol carefully washed several times in running sterile water, assembled and filled with the arsenical solution.

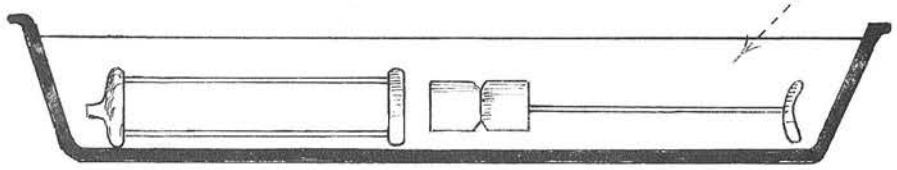
After use, the syringe was dismantled and again thoroughly washed in running sterile water. During this process it was reassembled and sterile water frequently drawn in and forced out through the needle so that the channels of the syringe nozzle and the needle were cleared of any blood or arsenical solution.

The washed syringe was now dismantled and placed at the back of its dish so that it became No. 16 (or No. 6 in the case of syringes used for withdrawal of blood) in the arrangement. This method was found to permit a syringe to steep in the lysol for a reasonably long period of time before it was required again (with an average number of patients attending this was generally at least twenty minutes). The needle was placed at the back of its dish.

Fig. 22 CHEMICAL STERILIZATION of SYRINGES [I.V.]



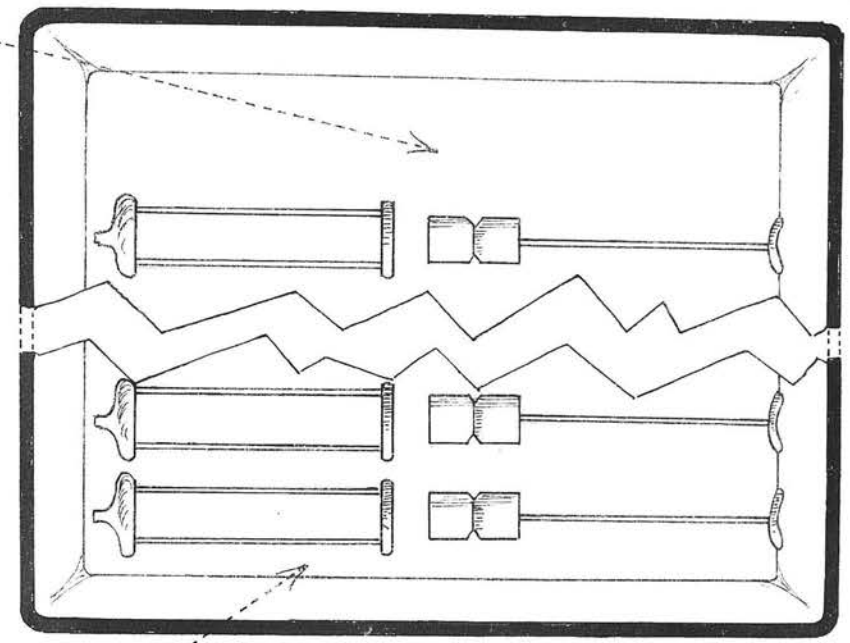
Syringes for arsenical compounds (10 cc)



Cross-section showing syringe submerged in lysol

Space for No. 1 syringe after use.

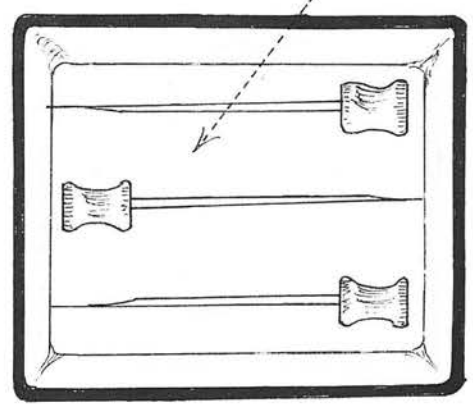
Direction of Use



Blood syringes (10 cc)

Lysol (1:10)

Spirit.



Needles

Although the incidence of jaundice was on the decline by the time this technique was instituted, examination of the graph (Fig. 1.) shows that the method would appear to have hastened the decrease in the number of cases of the disease.

b) Sterilization by autoclaving.

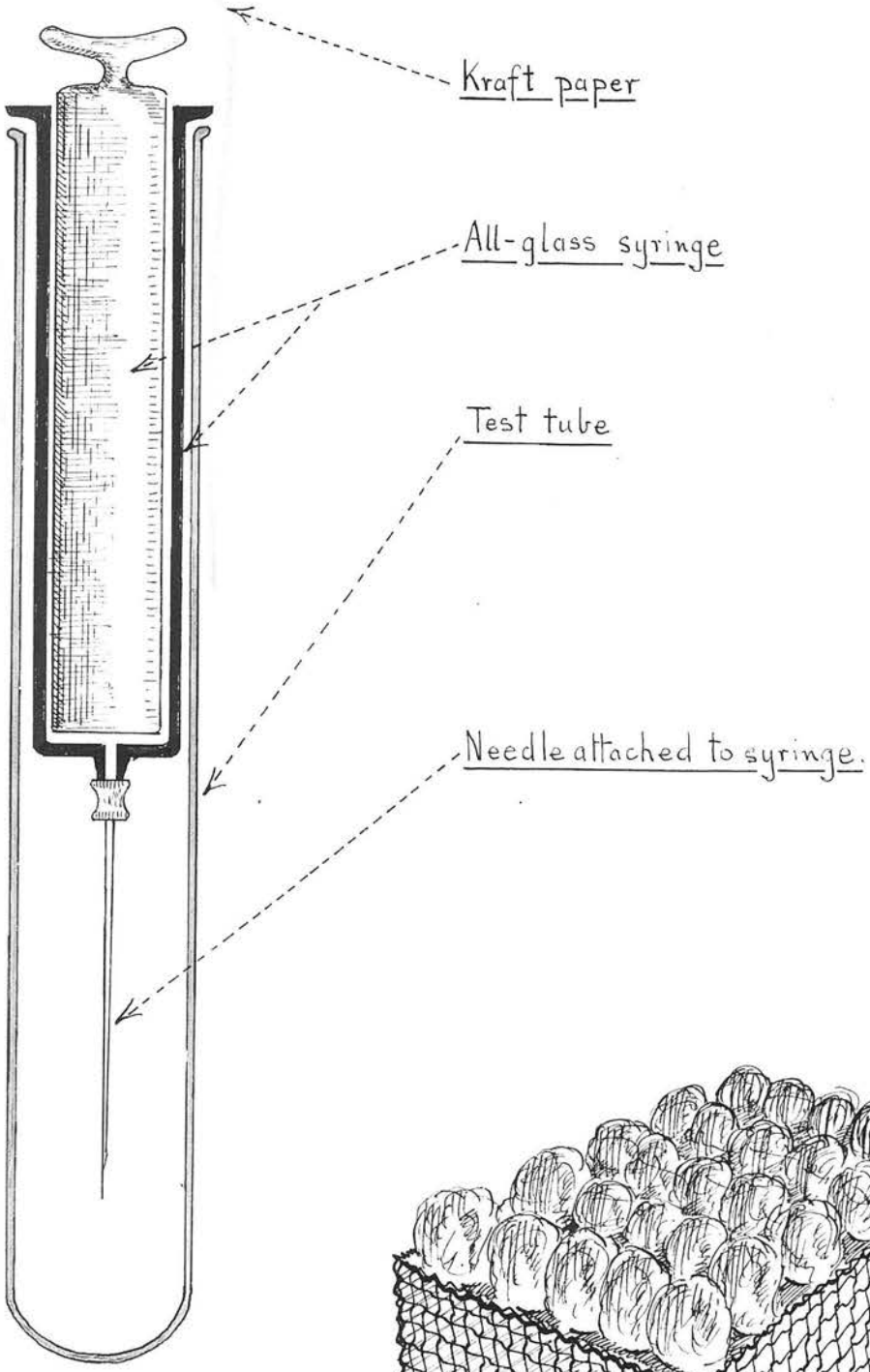
This method of sterilization of syringes was substituted for the above technique in January 1945.

All-glass syringes (5 cc. and 10 cc.) were used as they were less likely to break on heating than those of the glass-metal type.

Prior to sterilization, each syringe was thoroughly washed with sterile distilled water. They were then assembled and the needles placed in position. The assembled syringe and needle was placed in a glass test-tube of such diameter that the barrel of the syringe was a loose fit, but that the flange rested on the top of the tube (see Fig.23). The tube was of sufficient length to prevent the point of the needle impinging on its base. Finally, kraft paper was wrapped around the upper part of the tube and contents, and secured by a piece of string. The tubes were packed vertically in wire-cages and placed in the autoclave. (see Fig.) After use the syringe was dismantled, washed in sterile water, reassembled and placed back in its tube.

The syringes were subjected to a pressure of 20 lb. for 20 minutes (120° C.).

Fig. 23 The Autoclaving of Syringes [I.V. and I.M.]



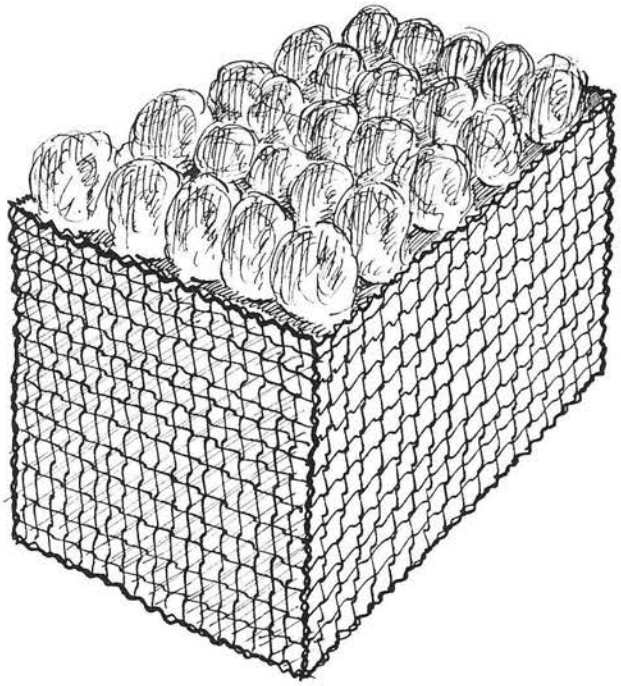


Fig. 23a.

Diagram to show wire-cage packed with 25 syringes ready for autoclaving.

The advantages of this method were:

(i) efficient sterilization of each syringe was assured.

(ii) each patient had a sterile syringe and needle to himself.

(iii) the preparation and sterilization could be performed before the sessions of the clinic opened. If a sufficient number of syringes were used a supply adequate to cover a few days work could be prepared in one sitting. Also, much time was saved, as the syringes were ready for immediate use and did not require cleansing prior to use.

(iv) it was a suitable method where large numbers of patients were involved.

(v) it was suitable for syringes used for all types of work e.g. arsenical compounds, bismuth compounds, venepuncture and penicillin. Each of these groups had its own batch of syringes, i.e., those used for arsenical compounds were kept apart from those used for venepuncture etc.

Although the incidence of jaundice had been lowered by the chemical method of sterilization the results achieved with the autoclaving technique were striking. Examination of the graph (Fig. 1.) will show that only three cases of jaundice occurred after its institution. These cases were in the first two

months of 1945. From March to December not a single case of jaundice developed.

It is probable that these two methods of sterilization of syringes, outlined above, played a major part in lowering the number of cases of jaundice in the clinic. However, it should be mentioned at this point that two other factors may have contributed to this decrease. The first was the choice, as from January 1944, of mapharside as the routine arsenical compound for the treatment of early syphilis. The second was the increasing use of penicillin in treatment from about the middle of 1945 onwards.

B) PRODROMAL PERIOD.

The main principles of treatment in this stage have already been discussed under Diagnosis.

The main steps taken were, temporary withdrawal of arsenic and bismuth and advising the patient about a fat-free, high carbohydrate and high protein diet, and urging abstention from alcohol. The patient was kept under close observation and his urine tested for urobilinogen or bile at each visit. His progress was also assessed by estimation of the icteric index.

In some cases intravenous infusions of 20% glucose solution in quantities varying from 400-1,200 cc once daily for two to three days were given.

C) STAGE OF JAUNDICE.

(i) Jaundice due to syphilis itself.

The principles of treatment in these cases were the same as those adopted in arsenotherapy jaundice with one important difference, namely, that anti-syphilitic therapy was commenced as soon as possible.

There were four patients in the series with jaundice due to their syphilitic infection.

The choice of drug used to start off the treatment varied according to the condition of the patient and stage of syphilis. On the whole, treatment was mild to begin with and bismuth was the drug used. One case was started off with neocardyl, one received bisantol and one was given bisglucol. When it was decided to reinforce the bismuth with arsenic, acetylarsan was the usual choice. The exact time of introduction of the arsenical depended on the patient's general condition, his response to bismuth and the severity of the syphilitic infection. For example, in one case of jaundice in association with a florid secondary syphilitic rash acetylarsan was administered with bismuth from the beginning.

(ii) Arsenotherapy Jaundice.

Where possible, a patient was advised to enter the Ward for treatment and 136 cases were treated as in-patients.

If the jaundice was relatively mild and if the patient was engaged on work of an essential nature

treatment was ambulant. When worsening of the condition took place the importance of in-patient therapy was again stressed upon the patient, who was then generally willing to accept this advice. It was noted that reluctance on the part of many patients to enter the Ward often resulted from the sense of apparent well-being that occurred when the prodromal stage passed into the stage of icterus. Also, several patients were reluctant to enter a venereal diseases ward in case relatives and friends might call upon them there. Twentyfour cases were attended by their own doctors at home.

The average duration of residence in the Ward was 27 days (males and females). The table in Fig. 24 . indicates the relationship between the various durations of in-patient therapy and cases of jaundice so treated. Patients were kept in bed until there was evidence of recovery e.g. disappearance of gastro-intestinal symptoms, increased appetite etc., and the icteric index was below 80. Exercise was limited at first and they were allowed up for a few hours each day.

Withdrawal of the Drugs.

This was one of the most important factors in the treatment of arsenotherapy jaundice and was carried out in all cases except five. In four of these the bismuth injections were continued, and in the fifth acetylarsan was given along with bismuth.

Duration of in-patient therapy	No. of cases		
	Males.	Females.	Totals.
0-5 days	10	-	10
6-10 "	15	6	21
11-20 "	42	9	51
21-30 "	20	7	27
31-40 "	12	4	16
41-50 "	2	-	2
51-60 "	3	1	4
61-70 "	-	-	-
71-80 "	1	-	1
81-90 "	-	-	-
90-170 "	1	-	1
Uncertain	3	-	3
TOTALS	109	27	136

Fig.24 . Duration of In-patient Treatment.

Diet.

Diet ranks second in importance to the withdrawal of arsenic and bismuth in the treatment of arsenotherapy jaundice. Where treatment was ambulant, the patient was given instructions on the diet to be taken, and in some cases they were issued with the diet sheets and asked to follow them as closely as possible.

In the earlier years covered by this investigation the diet was composed of a minimum of fat and plenty of carbohydrate. During the later years the protein content of this diet was increased in view of the recognition of the importance of proteins in protecting liver cells, against damage and the part played by the liver in the production of the essential plasma proteins. This protein was generally given in the form of skim milk (the casein of which contains the amino-acid, methionine) except in the early acute stages of the disease.

The jaundice diets for these patients were prepared in the Dietetic Department of the Infirmary and consisted of three distinct stages. Patients were put on to the first stage diet on admission and were changed on to the second and third stages according to the degree of improvement in their general condition.

Most cases were advised to continue on a low fat diet for some weeks after the jaundice and to

return to a full diet as soon as they found it did not produce any ill effects.

Alcohol was forbidden and a large daily intake of fluids encouraged.

Drugs.

A specific treatment has yet to be found which causes much alteration in the speed of recovery of this type of jaundice and the main stress in the treatment of the cases was put upon the two measures described above.

However, varying use was made of such drugs as the following:-

(i) Purgatives.

It was the habit to administer a saline purge to these patients once daily for a few days. It was thought inadvisable to use other forms of purgatives since many drugs are dealt with and finally destroyed by the liver.

(ii) Glucose.

Glucose solutions were given intravenously in a number of cases. They took the form of injections of 20-40 cc. daily or intravenous infusions of quantities varying from 400 c.c. to 1,600 cc. daily. In the very severe cases these infusions were often given continuously over about forty-eight hours. Eightyone patients received "drips" of glucose solution as part of their treatment.

Some cases were given large quantities of

powdered glucose daily, but many developed nausea as a result. Others received glucose fruit drinks.

The glucose, insulin, vitamen C regime was tried in eight cases. The glucose was given orally in quantities up to give ounces daily. Ten units of insulin were given twice daily. 50 mgm. ascorbic acid tablets were given thrice daily. Many of these patients experienced marked nausea with the glucose and the insulin produced a mild hypoglycaemic state in two cases.

(iii) Other drugs.

Among other compounds employed were sodium thiosulphate, yeast, felamine, injections of vitamen C and vitamen B, and kapilon. The cholagogues veracholate (tablets) and dehydrocholin (10 c.c. intravenously) were tried in some cases.

D) CONVALESCENCE.

When the jaundice had disappeared the patient was instructed to return gradually to a full diet as soon as he found that such a diet produced no ill effects. A cutting-down of the fat intake was advised for about a month or two following the attack.

Graded exercise was recommended during the early stages of convalescence, return to work was postponed, if possible, for a month, and alcohol was forbidden for at least three months.

RESUMPTION OF ANTISYPHILITIC THERAPY

The date of resumption of anti-syphilitic treatment was decided mainly by, first the severity of the attack of jaundice, and second the stage of the syphilis.

Apparent clinical recovery was the rule in most of the severer cases, but anti-syphilitic therapy was delayed, or only introduced in a very mild form in such cases so that the liver could be given every chance to attain as full a degree of recovery as possible. These patients were prone to relapse if therapy was recommenced too soon.

In early syphilis there was always the danger of syphilis relapse if arsenic and bismuth were withheld for too long a time. The rule in such cases was to recommence anti-syphilitic treatment, preferably with bismuth, as soon as the general condition of the patient was satisfactory and to bring in arsenic not later than three months after the disappearance of jaundice. In the later stages of syphilis early resumption was not so urgent.

The average interval between the disappearance of the icterus and the restarting of anti-syphilitic therapy was about two to three weeks. In forty-eight patients, treatment started before the end of the jaundice. These were generally cases of syphilis in which the jaundice was running a prolonged course.

In one such case bismuth was given sixty-five days before the final disappearance of jaundice. In one patient treatment was not resumed for a hundred and fortyseven days: in another it was almost eight months.

In fifteen cases it was not possible to estimate the duration of this interval as treatment for the jaundice was given outside the clinic or anti-syphilitic therapy was resumed in another clinic.

Choice of Drug.

Bismuth was the drug most favoured and it was used to commence treatment in 288 cases. Dosage was mild for the first few injections, e.g. 0.1 gm, the amount being increased as tolerated by the patient. It was the custom to exclude arsenic from the first post-icteric course, and in a number of cases it was withheld until the third course or later. When it was decided to bring in arsenic, the relatively mild Acetylarsan was most often used prior to the introduction of the stronger types.

Arsenical compounds were the first post-icteric antisyphilitic drugs to be used in nineteen cases. Of these, Acetylarsan was the drug of choice in eleven cases, Stabilarsan in four, Neokharsivan in two and Novarsenobillon in two. Treatment was cautious at first and dosage was increased gradually as borne by the patient.

As previously stated elsewhere bismuth was continued throughout the stage of jaundice in four cases. In another Acetylarsan and bismuth were both continued.

RELAPSE.

Relapse of jaundice occurred in twenty-~~eight~~ nine patients. In two cases there were two further attacks of icterus. One patient experienced three attacks.

The average duration between the first and second attacks of jaundice was about 50 days. This interval varied from about eight months to over a year in four cases, and the further appearance of icterus in these patients was probably not of the nature of a true relapse. One case developed jaundice within four days of the final clearing of the original attack.

The average duration of the disease in the relapses was thirty-five days. The shortest duration was eight days while in two cases the disease persisted over a period of ninety days in one and ninety-eight in the other.

The onset was usually sudden and only two patients gave a history of the usual prodromal symptoms such as anorexia, nausea and vomiting.

Eleven patients had received bismuth prior to the second appearance of icterus. Nine had been given arsenic (four after Acetylarsan, three after Stabilarsan and one each after Neokharsivan and Novarsenobillon). In eight cases anti-syphilitic treatment had not been resumed.

From two patients, who had been receiving antisyphilitic therapy, a history of alcohol was obtained. One case of relapse followed the misuse of alcohol by a patient who had not resumed his treatment for syphilis.

In one man who had been receiving bismuth cirrhosis of the liver was found. Broncho-pneumonia coexisted with the relapse in one case.

The clinical course of the disease was similar to that of the previous attack of icterus. Moderate liver enlargement was present in three patients, in one of whom there was also hepatic tenderness. Radiological examination revealed a poorly-functioning gall-bladder in one patient.

Treatment was conducted along the lines adopted for first attacks of jaundice. Four cases received in-patient therapy, the average duration of residence in hospital being twenty days.

The resumption of antisyphilitic therapy depended upon the factors previously discussed. In these cases of relapse mild treatment with bismuth was continued for a rather longer period of time prior to the introduction of arsenic. Acetylarsan was the arsenical of choice although many of these patients later received, and tolerated, Stabilarsan, Neokharsivan, Novarsenobillon and Mapharside.

EXACERBATIONS.

Exacerbations, as opposed to genuine relapses, were noted in a few cases of the first attack of jaundice. Almost without exception these were associated with the use of bismuth prior to the final disappearance of the jaundice or a too rapid return to normal diet. If the bismuth were withdrawn and an appropriate diet given rapid return to normal took place.

PROGNOSIS

In general, prognosis was favourable. Twenty-eight cases suffered subsequent attacks of jaundice. The mortality was 2.1%.

Judged by clinical standards and laboratory tests, complete recovery was the rule. Also, the later reception and toleration by the majority of these patients of arsenical compounds, often in full dosage, lent support to this belief.

This recovery was usually fairly rapid, but a number of patients only regained full health gradually over a period of about three months or more, as is often the case after any attack of jaundice.

In four patients in whom signs of liver impairment were found arsenic was not given again, therapy being continued with bismuth only. Also, as previously mentioned, one case subsequently developed cirrhosis.

SUMMARY AND CONCLUSIONS.

The thesis has been compiled from the results of an investigation of cases of clinical jaundice occurring in the Venereal Diseases Department of the Royal Infirmary of Edinburgh. The investigation was started about the middle of 1944 and continued up to the end of 1945. An examination of case histories back to January 1937 was also conducted in order that a survey covering a few pre-war years as well as the war period could be obtained.

1) During this period of nine years 374 cases of jaundice occurred. Four were cases of jaundice due to the syphilitic infection itself.

2) The period of increased incidence in jaundice extended from August 1940 to March 1944. The highest incidence was reached during 1942 to 1943.

3) The average interval between the commencement of antisyphilitic treatment and the appearance ("incubation period") was 98 days. The shortest recorded interval was eleven days and a few cases developed from eight months to over a year after the beginning of therapy.

4) The average interval which elapsed between the last injection of antisyphilitic treatment and the appearance of icterus was twenty-three days. In five cases it was only one day, while in one man jaundice did not develop for a hundred and forty days after the last injection.

5) Men were much more liable to develop jaundice than women. Of the 374 cases, 310 occurred in men and the remaining 64 in women.

6) The most commonly affected age groups in men were 21 to 25 years and 31 to 35 years. Among women the largest number of cases occurred in the age group 26 to 30 years.

7) Among men exactly half the cases developed in those employed in work of a heavy nature. Housewives were most frequently affected among the women.

8) Most of the cases occurred in patients suffering from early syphilis.

9) The arsenicals most implicated were Stabilarsan, Neokharsivan and Novarsenobillon in that order. Only one case followed the use of Mapharside, but when this drug was used in an "intensive" (eight-day) course combined with pyretotherapy, the incidence of jaundice was relatively high.

The average dosage of trivalent arsenic received by the patient prior to jaundice was 4.0 to 5.0 gm. With Tryparsamide this dosage was 20 to 30 gm.

By far the largest number of cases of icterus appeared after the completion of the first course of treatment and before the end of the second.

10) A history of alcohol was obtained in 10.6% of the cases. This is probably a conservative estimate as a large part of the patients were labourers and seamen.

11) A search for possible "septic foci" revealed that eighty-two patients had some form of oral sepsis, and twenty-two had dermatitis, otherwise little of value was obtained.

12) Prodromal symptoms occurred in a hundred and fifty-six patients. The commonest were gastro-intestinal symptoms (especially nausea) and joint pains (particularly the shoulder). The average duration of the prodromal period was ten days. In some, especially those with arthritic symptoms, it was much longer.

12) Diagnosis in the prodromal stage depended upon examination of the urine for urobilogen, or bile-salts and pigments, and the estimation of the icteric index. Once jaundice was established the icteric index was estimated. The possibility of other types of jaundice had to be borne in mind and such tests as the Van den Bergh Reaction and the specific agglutination test for Weil's disease were employed.

13) The disease ran a fairly mild course in most patients, although a hundred and thirty-six cases were admitted for in-patient treatment. The prodromal symptoms generally ceased with the onset of jaundice. Moderate hepatic enlargement was found in fifteen patients, while in four others it was marked. Three patients had splenomegaly associated with the hepatic enlargement. The onset was associated with pyrexia in three cases. Oedema,

ascites and neurological symptoms usually indicated a very grave prognosis.

14) The average duration of the disease was thirty-three days. In five patients it was less than five days while it was over ninety days in seven cases.

15) Attempts to perform liver biopsy on one patient were unsuccessful but the results of six post-mortem examinations were available. Ascites was found in four cases and another had a massive intraperitoneal haemorrhage. Pulmonary oedema and haemorrhages existed in five cases. Bile staining of most organs and widespread toxic changes were usually discovered. Oesophageal varices (Marked in one case) were found in three patients.

In one patient there was acute yellow atrophy of the liver, while in another acute necrosis had been superimposed on a portal cirrhosis.

The other four patients had cirrhosis of the liver (associated with an acute hepatitis in one case).

Moderately enlarged spleens were found in three cases. In two other patients where there was marked splenomegaly the typical spleen associated with cirrhosis was discovered.

16) In preventative treatment glucose was of little value. The two methods of sterilization of syringes instituted (chemical and autoclaving) appeared to reduce the incidence of jaundice remarkably.

Treatment of the prodromal stages was essentially directed to temporary withdrawal of the drugs, advice on diet and observation of the patient.

In the established condition the treatment consisted primarily in withholding the drugs (except, of course, in cases of jaundice due to syphilis itself) and the institution of a low fat, high carbohydrate and high protein diet. Otherwise, "drips" of glucose solutions and saline purgatives were the only measure of value. The glucose, insulin and vitamen C regime gave no striking results.

A hundred and thirty-six patients received in-patient treatment. The average duration of residence in hospital was twenty-seven days.

17) During convalescence graded exercise and continuation on a low fat diet were recommended. Alcohol was forbidden for at least three months.

18) Antisyphilitic treatment was usually resumed about two to three weeks after the disappearance of jaundice, although it was started in sixty-five patients before the final clearance of jaundice. The drug of choice was bismuth, followed by arsenic in low dosage in about three months. Very early resumption was only permissible in cases of early syphilis where there was the danger of syphilis relapse if the antisyphilitic drugs were withheld too long.

19) Twenty~~eight~~nine patients suffered from further attacks of jaundice, two of them experiencing two such attacks and one case experiencing three attacks.

Except in a few cases where the second attack appeared more than eight months after the first attack, these cases were probably genuine relapses. The average duration between the first appearance of jaundice and the relapse was fifty days. The average duration of the attack was thirty-five days.

Exacerbations in a few cases were generally due to the patients receiving bismuth or returning to a full diet prior to the end of the jaundice.

Prodromal symptoms were few and the onset often sudden in cases of relapse.

20) Prognosis was good and the majority of the cases apparently obtained full recovery and were able to receive and tolerate arsenic (often in full dosage) later on.

Evidence of liver impairment was found in four patients and one developed cirrhosis of the liver.

The mortality was 2.1%.

APPENDIX.

FIG. 25. YEARLY INIDENCE OF SYPHILIS.

YEAR.	MALES.	FEMALES.	TOTAL
1937	270	204	474
1938	290	198	488
1939	265	226	491
1940	287	226	513
1941	436	198	634
1942	556	253	809
1943	493	279	772
1944	327	224	551
1945	184	212	396
TOTALS	3,108	2,020	5,128

	1937		1938		1939		1940		1941		1942		1943		1944		1945	
SEX.	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Jan.	13	24	30	28	17	13	29	10	20	14	36	12	56	18	47	12	14	19
Feb.	26	13	24	22	22	16	15	14	30	19	50	15	38	23	27	25	10	11
Mar.	24	20	23	14	25	20	24	31	27	19	46	15	52	38	26	21	14	6
Apr.	23	14	23	10	22	15	27	18	26	14	47	21	36	16	26	25	10	18
May	31	17	27	22	17	25	24	23	39	17	43	15	47	21	28	26	8	15
June	13	13	22	20	24	22	19	16	36	12	42	22	35	22	26	21	8	19
July	17	16	16	10	30	19	33	18	36	15	49	25	48	28	23	19	19	19
Aug.	21	19	27	11	21	19	30	18	57	16	56	31	47	17	26	15	18	13
Sep.	31	22	21	16	20	16	19	11	34	19	41	21	50	24	23	23	14	17
Oct.	21	14	30	17	28	31	34	27	39	20	49	29	38	27	21	18	16	29
Nov.	29	15	23	18	16	17	19	17	41	16	49	17	25	29	30	11	28	26
Dec.	21	17	24	10	23	13	14	23	51	17	48	24	21	18	24	8	25	20

Fig.26. Monthly Incidence of Syphilis.

	1937	1938	1939	1940	1941	1942	1943	1944	1945	
1.	2,986	2,685	2,442	2,116	2,316	3,072	3,819	3,424	2,737	JAN.
2.	3,002	2,635	2,643	2,246	2,588	3,390	4,171	3,374	2,885	FEB.
3.	2,955	2,880	2,994	2,523	2,701	3,636	4,311	3,901	3,004	MAR.
4.	3,299	2,503	2,541	2,385	2,751	3,449	3,686	3,219	2,621	APR.
5.	3,353	2,432	2,729	2,791	3,224	3,463	3,945	3,512	2,724	MAY.
6.	3,038	2,506	2,566	2,340	3,173	3,355	3,789	3,564	3,164	JUN.
7.	2,514	2,432	2,230	2,396	3,104	3,597	3,782	3,347	2,972	JUL.
8.	2,648	2,476	2,475	2,497	3,253	3,742	4,291	3,121	2,484	AUG.
9.	2,871	2,536	2,193	2,489	3,315	3,661	3,928	3,031	2,396	SEP.
10.	2,935	2,701	2,421	2,626	3,274	3,793	4,022	3,701	3,340	OCT.
11.	2,949	2,680	2,547	2,652	2,992	3,200	3,953	3,295	3,750	NOV.
12.	2,754	2,458	2,506	2,465	3,588	3,747	3,390	3,450	3,280	DEC.
TOTALS	35,304	30,924	30,287	29,526	36,279	42,105	47,087	40,939	35,357	TOTALS

FIG.27 . THE MONTHLY INCIDENCE OF INJECTIONS. (Males and Females).

	1937		1938		1939		1940		1941		1942		1943		1944		1945	
SEX.	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Jan.	-	-	2	-	1	-	1	-	2	1	10	2	11	2	3	-	2	-
Feb.	-	-	1	-	1	-	1	-	5	-	8	-	8	1	4	-	1	-
Mar.	-	-	3	-	1	-	2	1	2	1	11	-	4	2	2	1	-	-
Apr.	1	-	3	-	4	-	3	-	2	1	12	2	7	3	1	2	-	-
May	-	-	2	-	3	-	-	-	2	-	6	1	7	-	1	-	-	-
Jun.	-	-	6	1	1	-	2	1	-	1	7	-	5	4	1	2	-	-
Jul.	4	-	1	1	3	1	2	-	6	-	6	1	7	4	-	-	-	-
Aug.	1	-	-	-	3	-	4	-	7	1	8	1	6	1	-	3	-	-
Sep.	5	-	1	-	2	-	5	-	4	-	11	2	5	2	1	-	-	-
Oct.	-	-	-	-	2	-	6	2	4	-	10	2	8	-	-	-	-	-
Nov.	3	-	1	1	4	-	5	1	3	1	8	1	-	1	1	-	-	-
Dec.	4	-	1	2	2	-	2	-	4	3	10	3	10	2	-	-	-	-
Totals in each sex.	18	-	21	5	27	1	33	5	41	9	107	15	78	22	14	8	3	-
TOTALS:	18		26		28		38		50		122		100		22		3	= 407

(33 relapses)

Fig. 28 . MONTHLY INCIDENCE OF JAUNDICE.

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